

# THE IRON AGE

Established  
1855

New York, November 9, 1911

VOL. 88: No. 19

Published Every Thursday by the

**DAVID WILLIAMS COMPANY**

239 West 39th Street, New York

Entered at the New York Post Office as Second-Class Mail Matter.

Subscription Price, United States and Mexico, \$5.00 per Annum; to Canada, \$7.50 per Annum; to Other Foreign Countries, \$10.00 per Annum. Unless receipt is requested, none will be sent. Credit for payment will be shown by extending the date on the wrapper of your paper.

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## Rail Buying for 1912

### Several Contracts Already Placed

### A Check to the Increase in Pig Iron Production, but Prices Are Lower in All Markets

Rail buying for 1912 has begun in earnest in the past week, and active contracting is expected to follow. The Louisville & Nashville has placed 50,000 tons with the Ensley mill and the Burlington has ordered 20,000 tons of open-hearth rails from Gary. The Norfolk & Western order, amounting to 25,000 tons, has been distributed among Pennsylvania and seaboard mills, about 10,000 tons going to Pittsburgh. It is reported that the Great Northern will buy 40,000 tons and, as heretofore, the order is expected to go to the Buffalo mill. The New York Central is figuring on its requirements, while the Pennsylvania is negotiating with the mills for a tonnage in excess of its contracts for this year. In the South a number of roads are about to buy, including the Georgia Central and the San Antonio & Aransas Pass. There appears to be no foundation for the recent rumor of a price below \$28 for Bessemer rails.

The November 1 blast furnace returns indicate a slowing down in the latter part of October in the rate of increase in pig iron production—an increase that has been under way since July. The October output of coke and anthracite pig iron was 2,102,147 tons, or 67,811 tons a day, as compared with 65,903 tons a day in September, an increase of 1900 tons a day, whereas September showed 3800 tons a day more than August and August 4300 tons a day more than July. One less furnace was active on November 1 than on October 1, but, owing to the larger capacity of the furnaces blown out than of those blown in last month, the active capacity at the opening of this month was 66,818 tons a day, against 66,468 tons a day on October 1. The rate of production November 1 was thus 1000 tons a day less than the average for the month of October.

Accompanying the continued increase in pig iron production there has been a reduction in stocks, but contrary to the ordinary effect of such a proof of enlarged consumption the market for merchant iron has been steadily weaker. The increased consumption has been so largely on steel works account that buyers of foundry iron have interpreted the conditions as giving them license to put off buying. This decision the weak attitude of sellers, as much as anything else, has encouraged.

The Central West has been of late the center of disturbance in pig iron prices. Little has been done in steel-making iron, and foundry buying has been evidently affected by the anticipation of lower freight rates on ore, not only from mines to upper lake docks, but from Lake Erie ports to furnaces. The agitation for lower freight rates on coke is also a factor. In the Cleveland district \$13 at furnace for No. 2 foundry

iron is reported, while at Chicago as low as \$14 for local iron has been done.

Recent car orders have brought business to the plate and structural mills, and an Indiana car plant has been started up. Car builders look for a gradual improvement in their business.

For the New York Connecting Railroad bridge the arch and two approach spans have at last been let. They call for 36,000 tons. Other approach work will require 54,000 tons. Fabricators find encouragement in a total of 130,000 to 140,000 tons of steel work pending in New York and vicinity, for the most part in jobs running over 1000 tons.

About 8000 tons of plates and shapes for the four vessels recently placed with lake yards will be rolled at Pittsburgh. A central Pennsylvania mill will furnish the plates for the five American-Hawaiian vessels to be built at Sparrows Point, Md.

Low prices continue on bars, plates and shapes, with no indication and little prospect of a firmer stand by manufacturers. Wire products have developed fresh cutting, particularly south of the Ohio River, and sales of nails have been made at the equivalent of \$1.55 at Pittsburgh mill and of plain wire at \$1.35.

Though current prices have made painful inroads upon profits, cast iron pipe foundries hold up their operating rate. An inquiry for 12,000 tons of 40-in. pipe has come from the municipality of Quebec.

At 29,607,102 tons, the shipments of Lake Superior ore to November 1 this season were 10,371,206 tons less than in 1910 to that date. The 30,000,000-ton mark for the season will be considerably exceeded, but 32,000,000 tons is now the limit of estimates.

### Some Iron Ore Fallacies

Government inquisitors into the status of the United States Steel Corporation have found the iron ore question a serious stumbling block. Commissioner of Corporations Smith, by a study of Lake Superior ore values, found that the effort to account for the corporation's enormous capitalization by a dollar-a-ton valuation on its ores was out of all reason. The Stanley committee, likewise, when inveighing against swollen capitalization, was quite ready to agree with Mr. Smith that the valuation put on the corporation's Lake ores was culpably excessive. But when the committee wanted to show that the Tennessee Company's enormously valuable ore deposits had been acquired by the corporation for only a tithe of their value, it was quite ready to believe that the 700,000,000 tons of Red Mountain ore were worth many times the purchase price. In the original Congressional investigation of the 1907 purchase it was very plainly charged that the corporation had secured a \$700,000,000 property, measured by ore values alone, for approximately \$30,000,000. In combatting the dollar-a-ton basis for Lake Superior iron ore valuation, Herbert Knox Smith cites the actual average royalty of 25.3 cents for Mesaba leases in the year 1903. Actual transactions in the Alabama field are even more damaging to the notion of the Stanley investigators that a property worth hundreds of millions was gathered in in 1907. The same syndicate which sold its Tennessee Company holding to the Steel Corporation had in the preceding year acquired a desirable ore deposit in the Birmingham district, known as the Potter property. In this transaction it paid \$800,000 for lands estimated to contain 60,000,000 tons of ore, or on the basis of 1 1/3 cents a ton!

One of the most glaring misstatements of the Government's petition against the Steel Corporation is that referring to the desirability of the ores acquired by the Tennessee Company purchase. We are told that in view of the many accidents with Bessemer steel rails the railroads were demanding the better open-hearth rail, for which the ores of the Tennessee Company were suitable; also that the Tennessee Company, having taken a large order for rails from the Harriman lines, was about to become a powerful competitor of the Steel Corporation for the rail business of the country. Altogether misleading is the inference that these Southern ores were better for open-hearth rails than hundreds of millions of Lake Superior ores which the corporation already had. As is well known, the Alabama ores are much less economical for the open-hearth process than the Lake Superior ores, requiring the expensive plant necessary for the duplex process of steel making and the more expensive practice involved in that process. It may be added that no rail mill in the United States had a higher cost than had the Ensley mill when the Steel Corporation acquired it, and that the early experience of the Harriman lines with Alabama open-hearth rails was not such as to indicate that Ensley would be a particularly dangerous competitor of the other rail mills of the country.

One further ore fallacy may be cited in this connection; it is found in the portion of the Government's petition relating to the Great Northern lease. The Government admits that it has been informed of the corporation's decision to cancel the lease, but it hastens to say that three years must elapse before this can be done, and meantime the greedy corporation might set to work and take out millions upon millions of these precious ores. Hence, prompt action by the courts is invoked. In his muckraking ardor the Government's attorney had no room in his mind for the fact that the great difficulty the corporation has encountered in connection with operations under the Great Northern lease has been the physical impossibility of getting out of the ground and putting in shape for use in the blast furnace the minimum stipulated quantities of the Hill ores. Enormously expensive preliminary work has had to be done to open up these properties, and time and millions have been spent in installing plant for the concentration of the sandy ores of the western Mesaba. Quite otherwise than the hysterics of the Government's attorney would have it, the real situation is such that the Steel Corporation will have difficulty in getting out by January 1, 1915, the minimum amounts on which royalties must be paid.

### Close Time Study of Factory Operations

To the uninitiated reader of scientific management literature there is one practical point commonly dispatched with a mere reference. That is the use of the stop watch in time studies. The fact that cost determinations of unit operations are largely dependent on the time element of given divisions of the work seems to have led to the error of overlooking everything else save the actual effect of the study on the human factor. It is probably safe to say that often in using the stop watch, the actual chances of error on the part of the observer are not apprehended, or a true knowledge of the time demands of the several steps into which any complete operation is divisible is not obtained. Cases are known of a series of time

readings all close enough to the average to encourage the adoption of the average figure, when an analysis by further subdivision would have shown one or two little steps on which there was loss of time to the operator.

There is a point beyond which it becomes unwise to carry the subdivision; yet sometimes one finds extended calculations on a unit carried to the third and fourth decimal places. One reason for the situation is that the observer does not realize how he may readily obtain knowledge of the accomplishments of small periods of time. It is not the purpose here to elaborate on this detail of studying plant-efficiency promotion nor even to outline any procedure, but to direct attention to a phase of plant study neglected except by leaders in the movement. It will probably be argued that the so-called hair-splitting study is not justifiable, but this is like the claim of the mediocre student who strives to excuse an antipathy to close application to the problems allotted to him. Were one to get records of a given cycle of operations from, say, operation 1 to operation 1, and then of other continuous operations, say from operation 2 through the cycle to operation 1 and so on, the actual time consumption and possible showing of irregularities and time waste could be obtained with a minimum of inaccuracy. There are variations which will occur to the observer, and the extra labor will generally not be serious. Such seeming refinements have led to the discovery of possible improvements not noted in the preliminary studies.

If proper care were always taken in fixing time rates, there would perhaps be less trouble in plants operated on a piece-work basis. The disrupting tendency of repeated changes of wage payments based on piece work is certainly to be avoided and the utmost care is warranted in establishing at the outset a stable unit.

### A Mammoth in Steam Power Generators

When the vertical steam turbine was introduced, about eight years ago, the enthusiastic engineer was wont to rush into calculation to show what little sheds large power stations could hereafter be. Then had arrived a prime mover combining much in little. In comparison the steam engine was little in much. In the enthusiasm of the moment it was forgotten that the auxiliary apparatus—the condenser, the air and circulating water pumps, the hydraulic apparatus for the step bearing—would take up a great amount of space, sufficient, in fact, to accentuate the small proportions of the unit itself. The steam turbine has grown in capacity, and the bulk of the auxiliaries has not increased in proportion, or, what is a better description, the limited foundation area of the turbine allows for the use of decks under the main floor of the power house for the disposal of the auxiliaries.

The force of this fact was strongly felt last week by a visit to the Waterside station of the New York Edison Company. Here was put into operation a unit of no less than 20,000 kw. capacity. It is the first of a number being built by the General Electric Company for this station and also for Chicago. Under dramatic conditions it assumed its burden, and the occasion emphasized a step forward in the large scale of operations to which we have become accustomed. Business conditions warranted the single large unit, and engineering successfully supplied the machine. Engi-

neering analysis doubtless pointed to the wisdom of the move and overcame the commercial obstacles which ordinarily restrict the development of new sizes and patterns of established articles. The spectacular features of the event and an explanation of the gigantic size of the power generator are mentioned elsewhere in this issue.

### Small Unit Producer Gas Engines

The producer gas engine of small power promises to become one of the important factors in the field which is now practically controlled by the gasoline and kerosene types. A number of manufacturers are working out the problems of engine and producer; and while the work is by no means completed, experiments have progressed far enough to give ample assurance of success in the not very distant future. The field of the engine of small horse power is enormous. The economy of the gas producer engine is well established. Its safety as compared with gasoline engines is self-evident and will appeal to many users, including the great class of owners of pleasure craft. If greater reliability could be secured than from liquid fuel engines, an important advance will have been made, for in spite of the developments of recent years much is still to be wished for on this score. This the manufacturers of producer gas engines expect to achieve. They may live to compete with crude oil engines of an advanced design, and the exponents of the kerosene engine are confident of success, especially for commercial and industrial purposes. But an important place awaits the engine which will secure from small quantities of coal a new maximum of power.

### Oxy-Acetylene Welding Menaced

The Massachusetts authorities are creating exceptional rules for the control of users of oxy-acetylene welding apparatus. The explosion of an acetylene generator, due to extraordinary carelessness, led to an investigation of the whole question, and the results promise to be ordinances so severe as to constitute a hardship in some cases. No manufacturer will criticize preventive measures against accident. More than ever before this is true, because Massachusetts, in common with many other States, will soon be paying accident claims under a workmen's compensation act. Small employers can least afford to take chances, for a serious accident may prove financially crippling. But a wise limit to precautions should be sought. In a general way the new rules will include an increased distance between the generator building and the plant; a limit to the number of oxygen flasks which may be stored in the building, and an insistence that the structure be of fireproof construction.

Co-operation between the authorities and the interested houses should always be sought in promulgating laws which are to govern the latter. Often a compromise can be worked out, to the benefit of everyone. On the other hand, in the case in question the police power of the State government is impregnable. Rules once established, no relief can be obtained by those who are adversely affected. In the present instance the manufacturers believe that they are being discriminated against, because the qualities of their welding agents constitute no greater menace than can be found in other business conditions, as, for instance,

in the ordinary soda fountain and in the use of gasoline. They complain not at the regulations but at what they term unreasonable and burdensome restrictions.

Referring to the action taken on the Great Northern ore lease, James J. Hill said recently: "I am not worried about the cancellation of the Steel Corporation ore contract. Iron ore does not go out of style, and it will not run away. If it lies in the ground for 25 years and the country grows, and the demand for iron and steel increases, it will not be worth any less than it is now." Mr. Hill may be right in the opinion that iron ore will not be worth any less 25 years hence than it is to-day. But that is not quite the same as establishing a high valuation by contract to-day—high in comparison with the average royalties of the past ten years' transfers—and then adding about 4 per cent. interest for every year a ton of ore remains in the ground. Mr. Hill's contract with the Steel Corporation meant that a ton of ore worth 85 cents in the ground to-day would bring \$1.70 in royalty 25 years from now. Such a scaling up at the base of the steel industry would mean that the United States, instead of taking more of the world's steel trade, must accept an increasing handicap in international competition.

### Correspondence

#### The First Steel Rails Rolled at Johnstown

To the Editor: In the report of the speech which I made to my old fellow workers of the Cambria Steel Works, which you published in your issue of October 5, I am quoted as saying that the first steel rails made at Johnstown were rolled on the 18-in. train. It should have been the 21-in. train. There were two trains of rolls on which iron rails were made, the older one 18 in. and the newer a 21-in. train, and it was upon the larger one that the steel made by the Pennsylvania Steel Company was rolled into rails. We had trouble from breaking the middle blooming roll, which was overcome by casting the roll around a forged steel center of about 6 in. in diameter.

ROBERT W. HUNT.

STEAMSHIP MANCHURIA, En Route to Japan, October 21, 1911.

#### German Steel Plant Construction

Under date of October 27, our Berlin correspondent makes the following statement regarding new plant construction in Germany:

"Some details were given in my report last week about the new plant of the Burbach-Esch-Düdelingen combination at Esch in Luxemburg. This week some information is available about the new Gelsenkirchen establishment at the same place and the Thyssens at Hagendingen, a little north of Metz on the Moselle. The Gelsenkirchen plant has six blast furnaces with a daily capacity of 1200 to 1300 tons of pig iron. Two of these have already been finished and are now filled with their first charges, to be blown in within a few days. Blooming and finishing mills connected with the steel plant will turn out annually about 400,000 tons of heavy rails, structural shapes and other products.

"The Thyssens plant, begun only within a year, is making very rapid progress, and is expected to go into operation by the middle of next year, which is also the date set for the beginning of full operations at the Gelsenkirchen plant. The Thyssens are also building six blast furnaces, but these are of larger size than those at Esch and will make about 600,000 tons a year. Steel plant and rolling mills will consume the entire product, making from 550,000 to 600,000 tons of crude steel a year. The Thyssens already rank among the iron and coal magnates of Germany, being owners of the great Gewerkschaft Deutscher Kaiser at Duisburg on the Rhine and Ruhr. Besides the

new furnaces already mentioned, the Aumetz-Friede Company has been reconstructing and modernizing its furnaces for several years and adding new ones and has just started another of 220 to 240 tons capacity per day; when its present plans are completed it will have nine large furnaces. The de Wendel Company at Hayingen in Lorraine has completed the enlargement of two old furnaces and several smaller concerns are also building furnaces.

"It is estimated that, when all the new blast furnaces and steel plants now erecting in the Luxemburg-Lorraine district shall have been completed, the yearly production of that region will be increased by about 1,900,000 tons of pig iron and 1,700,000 tons of steel. This huge addition to the German yearly production, not to mention the increase in the Rhenish-Westphalian and other districts, will present a most difficult problem in the forthcoming negotiations for the prolongation of the Steel Works Union, which lapses at the end of next June. It will be a problem of no less difficulty to find a market for all this new addition to the steel production.

"It is reported unofficially that the Prussian Government is planning to buy or build a steel plant and mill for making its supply of rails for the state railroads. If this is true, it will be a heavy blow for the Steel Works Union."

### The Steel Corporation Suit

#### The Attitude of Buyers of Steel and Independent Manufacturers

E. W. Edwards, president of the Edwards Mfg. Company, Cincinnati, has a communication in the Cincinnati *Enquirer*, in which, speaking from the standpoint of a buyer of steel sheets, he contends that the dissolution of the Steel Corporation would not be a benefit but an injury. He says in part:

The Government now asks that the Steel Corporation be dissolved, also the constituent companies, such as the American Sheet and Tin Plate Company, etc. In other words, the Government practically demands that the blast furnaces pay a profit on the ore, that the steel mills pay a profit on the pig iron, that the finishing mills pay a profit on the billets, that the jobbers pay a profit on the finished line and the dealer a profit to the jobber, all of which the people would pay, for the steel companies, whether they are independent or otherwise, are not in the habit of working for their health.

In the meantime many of the independent mills have been growing much faster in proportion than the Steel Corporation, and some of the independent finishing mills have put in blast furnaces and steel mills, so that in their particular field they are as strong as the Steel Corporation, making the steel from the ground up. Should the court grant the petition of the Government and dissolve not only the Steel Corporation but its subsidiaries, they would be absolutely at the mercy of the large independents unless they immediately proceeded to make miniature steel corporations of themselves by putting in blast furnaces, steel mills, etc., which would leave the public exactly where it is today.

Without knowing it the Government is practically insisting upon the public paying several profits rather than one, for if it forced the dissolution of all the constituent companies without permitting them immediately to fortify themselves, the independent buyers of steel like myself could not buy materials as low as they are to-day.

For instance, we were paying 50 per cent. more for sheet steel prior to the formation of the American Sheet Steel Company than we are today, and there is a profit in today's prices to the Steel Corporation if they figure from the ore to the finished product, but if the public is compelled to pay a profit on the ore, then a profit on the billets, and then a profit on the finished rolled products, the articles manufactured therefrom could not be sold at any such prices as are ruling today. My company buys steel from both the independents and the Steel Corporation, the majority from the independents. Chaos in the steel trade, I believe, would, temporarily at least, result to our particular advantage, but it certainly would hurt the country as a whole.

George E. Day, general sales manager of the Youngstown Sheet & Tube Company, Youngstown, Ohio, is quoted as follows by a local paper concerning the attitude of independent steel producers toward the Government suit against the Steel Corporation: "None of the independents favored the suit. Recently I attended a big meeting of the supply jobbers in Chicago. There was not a man among us who did not feel that the Steel Corporation had acted to the interest of the trade and to its benefit in general. Neither its consumers nor its competitors felt otherwise."

## Manufacturers Contest Freight Advances

WASHINGTON, D. C., November 6, 1911.—The Cambria Steel Company protests, in a letter of recent date, to the Interstate Commerce Commission, against a proposed increase in rates by the Baltimore & Ohio and the Pennsylvania Railroad companies, of three cents per 100 lb. on iron and steel articles, carloads, from Johnstown, Pa., to Moline, Rock Island, Davenport and upper Mississippi River crossings. The company was notified that the new rate would go into effect November 1. The present rate of 24½ cents from Johnstown, the company asserts, has been in effect for a number of years and is regarded as a fair compensation for the service. In view of these circumstances the advance is characterized as unjust and unreasonable and the commissioners are asked to suspend the new rate pending an investigation as to its reasonableness. Referring to the existing rate of 24 cents from Johnstown to St. Louis and the lower Mississippi River crossings, the company says that this applies both by way of the direct lines and by way of Chicago, and that it is a half cent less than the present rate to the upper Mississippi River crossings, which rate applies both by way of the direct lines and Chicago, the distance to St. Louis by either the direct line or Chicago being greater than by way of Chicago to the upper Mississippi River crossings.

The Ironton Iron Company, Ironton, Ohio, directs the attention of the commission to a notification received by it that the rates on pig iron from southern Ohio furnaces to upper Mississippi River points will be increased from \$3.10 to \$3.75 a ton from and after November 1. The company regards this action as discriminatory against the furnaces of southern Ohio, and in favor of the Chicago and Milwaukee furnaces and asserts, also, that it would cause the consumers of pig iron in southern Ohio to pay the proposed advance in freight rates in excess of what they could purchase their material if allowed a competitive market based upon the present freight rates. It is further asserted that the proposed rate is in favor of iron from the Southern furnaces and that it also will be in favor of iron from the Virginia furnaces, inasmuch as shipments entering this territory from Southern furnaces pass through Peoria, Ill., and that the tariff is based on Peoria basis freight rates. Continuing the letter says:

The Western roads' proportion of freight rates from Peoria to Moline and kindred points is forty cents a ton. Under the present tariff of \$3.10 a ton from southern Ohio furnaces, they get as their proportion 50 cents a ton on the through rate already receiving an advantage on the southern Ohio irons over the Southern iron of 10 cents on the freight rate. Should they advance this rate as proposed, it would give them an additional 70 cents on southern Ohio iron. Our information, also, is that the rate now in effect from Virginia furnaces to East Burlington, Sterling, Moline, East Moline and Rock Island is \$3.85 a ton, and should the freight rates from Southern Ohio furnaces be made \$3.80 a ton it would be only 5 cents less than the rate from the Virginia furnaces, which, according to distance haul, would be manifestly unfair.

In view of these circumstances the Ironton Company look on the proposed advance as a studied effort on the part of the Western railroad companies and the Chicago and Milwaukee furnaces to drive it out of the market, not by competition in prices but by an uncalled-for and arbitrary advance in freight rates to these points. Furthermore, the company asserts, approximately 20,000 tons of Northern pig iron is consumed by the plants in the territory referred to and the proposed advance of 70 cents a ton would virtually drive it from that market to the benefit of the Chicago and Milwaukee plants. The company, in conclusion, says it understands that the proposed advance in rates is opposed by all the railroads in the Central Freight Association; that they all feel it to be an injustice and that they are unable, also, to compel the lines running west through their territory to continue the present basis of rates. They see no reason why the present rate should be disturbed as compared with the freight rate of \$2.50 to St. Louis and other points.

The Lackawanna Steel Company directs the attention of the commission to an advance of from 3 to 4 cents per 100 lb. by various Buffalo railroads in rates on iron and steel articles from Buffalo to so-called upper Mississippi River points, including Moline, Rock Island and Davenport.

This advance, it is contended, is unjust and unreasonable and the commission is asked to suspend the tariffs in question pending an investigation as to their reasonableness. The letter continues:

The rate from Buffalo to St. Louis and lower Mississippi River crossings via direct lines or via Chicago, 22½ cents per 100 lb. on iron and steel articles, carloads, or one-half cent less than the present rate to the upper Mississippi River crossings, while the distance to St. Louis direct or via Chicago is greater than via Chicago to upper Mississippi River crossings.

The company believes, therefore, that the rate to the latter points should not exceed the rate to St. Louis.

The Washington representatives of the Tri-City Manufacturers' Association enter their protest against the increased rate on iron and steel articles from Pittsburgh to Davenport, Rock Island and Moline, or any other tariffs that name a rate on such articles from Pittsburgh to the foregoing cities in excess of 23 cents per 100 lb., as follows:

It has been frequently stated that the intent of Congress, in all its legislation under the commerce clause of the constitution, has been to bring about equality and reasonableness—the reasonableness in every case being taken to mean the lowest possible rate at which a carrier can do business and keep out of the bankruptcy court, and we object to this contemplated advance, both on the ground of its inequality and its unreasonableness.

As to its inequality, we would recite that our members are largely engaged in the manufacture of agricultural implements and that as such are in direct competition with manufacturers located at Rockford, Canton, Peoria and Sterling, whose rates on their raw material are not scheduled for a like advance, or, in fact, for any advance. Furthermore, the present rate on iron and steel articles from Pittsburgh to Rockford, Peoria and Sterling is 20½ cents, while to Canton it is 22½ cents, and the rate of 23 cents—which the Tri-Cities now enjoy and which the railroads are attempting to advance—represents about the same relative basis as has been in effect from Pittsburgh to these manufacturing points for years.

As to its unreasonableness, we would recite that, since 1900, the 23-cent rate, which it is now proposed to advance, has been the maximum practically without interruption and that it affords the carriers a reasonable return for the service involved. Should the proposed advance to 26 cents become effective it would force the manufacturers of the Tri-Cities to assume a burden of approximately \$100,000 per annum through the increased cost of transporting their cheap raw material, which burden they would be unable to pass along to the consumer by advances in prices of manufactured articles, because of the fact that rates on iron and steel to points where competitors are located had not been advanced in like manner.

The commission is asked, therefore, to suspend the 26 cent rate and to continue the present rate of 23 cents.

The De Forest Sheet & Tin Plate Company, Niles Ohio, writing under date of October 26, referring to the advance in rates on iron and steel articles by the Pittsburgh & Lake Erie, the Baltimore & Ohio, the Pennsylvania, the Erie and the Lake Shore & Michigan Southern, says:

Inasmuch as these tariffs advance the rates to various points, including points of interest in this district, namely, Youngstown and Niles, to Rock Island, Moline and the upper Mississippi River crossings, from 3 cents to 5½ cents per 100 lb.; that inasmuch as the distance to these upper river crossings is less than it is to St. Louis, that notwithstanding this difference in distance the present rate to St. Louis is less than it is to Rock Island, Davenport, Moline, it is unreasonable to impose this advance rate which is also discriminatory.

The commission is asked, therefore, to suspend the new tariff until inquiries have been made as to the reasonableness of the advance. The commission has written the DeForest Company that the "effective dates" of these tariffs have been suspended for a period of 120 days. The Thomas Steel Company and the Empire Iron & Steel Company, Niles, Ohio, who have written substantially to the same effect, have been notified, also, that the rates have been thus suspended.

**Open Hearth Steel Works in Germany.**—A compilation of open hearth steel works in Germany made by Stahl und Eisen shows that in Germany and Luxemburg there are 115 which are equipped with 462 furnaces—104 acid and 358 basic. Of the total 28 furnaces have a capacity at each heat of from 1 to 5 tons; 47 from 5 to 10 tons; 144 from 10 to 20 tons; 121 from 20 to 31 tons; 63 from 30 to 40 tons; 38 from 40 to 50 tons; and 21 have a capacity of 50 tons and over. The average capacity of all the open-hearth furnaces per heat is 10,580 tons.

# Pig Iron Production

## October Shows Further Increase

Present Daily Active Capacity, However, Is Less than the Rate in October

Pig iron production in October was 2,102,147 tons of coke and anthracite iron, or 67,811 tons a day, as compared with 1,977,102 tons in September, or 65,903 tons a day. One more furnace was blown out last month, however, than the number blown in, so that active capacity November 1 differed little from that of October 1—66,818 tons a day against 66,468 tons—though it was about 1000 tons a day less than the rate of output in October. The increase in production which has been under way since July has thus apparently been checked.

At 50,351 tons a day, steel works furnaces made the largest output last month since May, 1910, while that of merchant furnaces, 17,460 tons a day, was the largest since May of this year.

### Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, beginning with October, 1910, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons			
	Steel works.	Merchant.	Total.
October, 1910.....	45,794	21,726	67,520
November .....	41,427	22,232	63,659
December .....	35,909	21,440	57,349
January, 1911.....	36,401	20,351	56,752
February .....	42,349	21,741	64,090
March .....	48,970	21,066	70,036
April .....	47,805	21,031	68,836
May .....	42,270	18,809	61,079
June .....	42,708	16,877	59,585
July .....	42,472	15,369	57,841
August .....	47,120	15,030	62,150
September .....	49,696	16,207	65,903
October .....	50,351	17,460	67,811

### Output by Districts

The table below gives the production of all coke and anthracite furnaces in October and the four months preceding:

Monthly Pig Iron Production—Gross Tons.					
	June. (30 days)	July. (31 days)	August. (31 days)	Sept. (30 days)	Oct. (31 days)
New York .....	130,395	124,347	118,145	114,418	122,680
New Jersey .....	3,600	1,386	.....	.....	.....
Lehigh Valley ....	72,787	66,404	77,021	81,728	85,958
Schuylkill Valley..	44,039	45,859	53,397	52,546	55,716
Lower Susquehanna and Lebanon Val.	41,751	40,084	38,741	36,687	37,687
Pittsburgh district.	415,519	419,248	469,012	482,013	529,872
Shenango Valley..	78,196	79,571	84,884	82,879	92,997
West. Penn. ....	60,047	73,177	96,366	98,324	101,030
Maryland, Virginia and Kentucky ..	48,969	52,583	46,262	49,243	55,768
Wheeling district..	93,617	93,973	94,476	92,130	100,529
Mahoning Valley..	188,187	184,402	189,200	213,872	228,248
Central and North. Ohio .....	141,973	116,953	131,850	131,020	135,004
Hocking Valley, Hanging Rock and S. W. Ohio	20,245	11,321	7,262	16,785	24,750
Chicago district ..	249,666	272,817	287,875	289,198	288,581
Mich., Minn., Mo., Wis., Col., Wash.	54,391	57,661	63,114	61,276	68,064
Alabama .....	117,015	126,200	140,879	149,238	150,219
Tenn., Georgia and Texas .....	27,169	27,082	28,153	25,745	25,044
Total.....	1,787,566	1,793,068	1,926,637	1,977,102	2,102,147

### Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

### Production of Steel Companies—Gross Tons.

Fig.—Total production—				Spiegeleisen and ferromanganese.	
1909	1910	1911		1910	1911
January .....	1,117,823	1,773,201	1,128,448	19,538	8,360
February .....	1,073,363	1,620,539	1,185,782	21,396	12,821
March .....	1,140,553	1,739,212	1,518,063	25,591	11,784
April .....	1,093,092	1,669,898	1,434,142	22,304	10,657
May .....	1,356,448	1,619,283	1,310,378	26,529	13,641
June .....	1,365,527	1,549,112	1,281,241	27,680	22,611
July .....	1,508,762	1,462,689	1,316,646	22,924	17,067
August .....	1,591,991	1,442,572	1,460,610	25,756	14,579
September .....	1,660,839	1,410,221	1,490,898	15,151	17,757
October .....	1,769,094	1,419,624	1,560,884	8,500	19,697
November .....	1,689,994	1,242,804	.....	9,032	.....
December .....	1,768,799	1,113,174	.....	12,178	.....

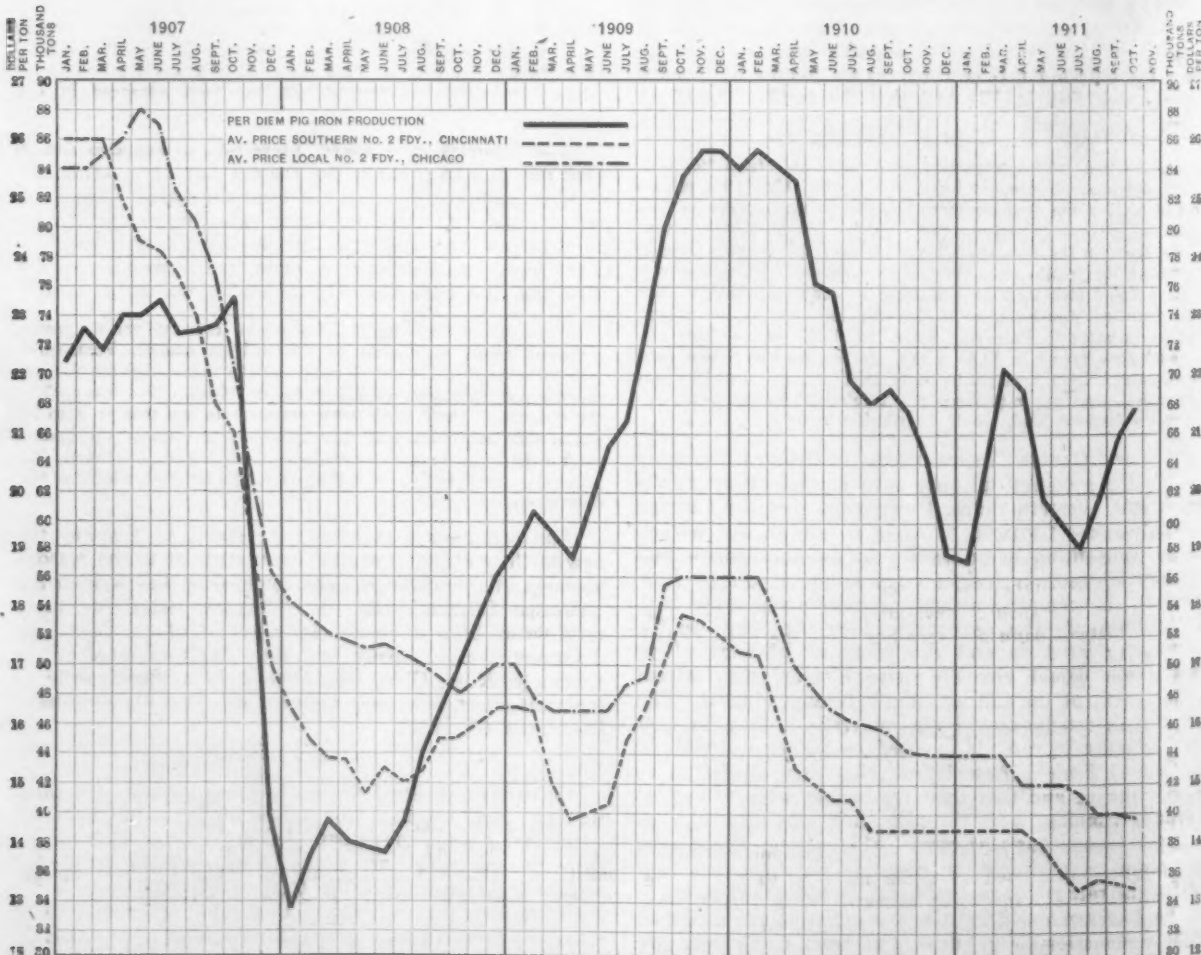


Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to November 1, 1911; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace.

## Capacity in Blast November 1 and October 1

The following table shows the daily capacity of furnaces in blast November 1 and October 1:

Coke and Anthracite Furnaces in Blast.					
Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per day.	Number in blast.	Capacity per day.
New York:					
Buffalo.....	17	10	3,610	9	3,203
Other New York.....	7	3	626	3	611
New Jersey.....	7	0	0	0	0
Pennsylvania:					
Lehigh Valley.....	22	12	2,595	12	2,557
Spiegel.....	3	2	177	2	167
Schuylkill Valley.....	16	7	1,810	7	1,838
Lower Susquehanna.....	7	1	322	2	619
Lebanon Valley.....	10	5	742	4	604
Pittsburgh District.....	50	37	15,940	39	15,726
Spiegel.....	3	2	242	2	240
Shenango Valley.....	20	10	2,990	10	2,929
Western Pennsylvania.....	27	11	3,160	12	3,510
Maryland.....	4	2	550	3	772
Wheeling District.....	14	9	3,243	9	3,071
Ohio:					
Mahoning Valley.....	24	18	7,310	18	7,125
Central and Northern.....	23	11	4,355	11	4,367
Hocking Valley, Hanging Rock & S. W. Ohio.....	15	6	850	5	665
Illinois.....	31	21	9,093	21	9,532
Spiegel.....	2	2	216	2	185
Mich., Wis. and Minn.....	10	5	1,022	5	1,020
Colorado, Missouri and Wash.....	8	4	1,240	3	1,022
The South:					
Virginia.....	23	6	725	6	635
Kentucky.....	5	2	346	2	265
Alabama.....	46	19	4,846	19	4,950
Tennessee and Georgia.....	20	7	808	7	855
Total.....	414	212	66,818	213	66,468

The list of furnaces blown out in October includes Niagara B in the Buffalo district, one Steelton (banked) in the Susquehanna Valley, one Carrie and one Edgar Thomson in the Pittsburgh district, Scottdale in western Pennsylvania, Low Moor in Virginia, furnace D at Sparrows Point (banked) and one Ohio in the Mahoning Valley. Among furnaces blown in were one Wickwire and one Lackawanna in the Buffalo district, Robeson in the Lebanon Valley. Radford Crane in Virginia, Marting in the Hanging Rock district, Cherry Valley in the Mahoning Valley and one Colorado.

## Chart of Pig Iron Production and Prices

The fluctuations in pig iron production from January, 1907, to the present time are shown in the accompanying

chart. The figures represented by the heavy line are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of *The Iron Age*. The two sets of figures are as follows:

## Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907—Gross Tons.

	1907.	1908.	1909.	1910.	1911.
January.....	71,149	33,918	57,975	84,148	56,752
February.....	73,038	37,163	60,976	85,616	64,090
March.....	71,821	39,619	59,232	84,439	70,036
April.....	73,885	38,289	57,962	82,792	68,836
May.....	74,048	37,603	60,753	77,102	61,079
June.....	74,486	36,444	64,656	75,516	59,585
July.....	72,763	39,287	67,793	69,305	57,841
August.....	72,594	43,851	72,546	67,963	62,150
September.....	72,783	47,300	79,507	68,476	65,903
October.....	75,386	50,554	83,856	67,520	67,811
November.....	60,937	51,595	84,917	63,659	.....
December.....	39,815	56,158	85,022	57,349	.....

## Monthly Average Prices in Dollars of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry at Chicago District Furnace Since January, 1907.

	1907.		1908.		1909.		1910.		1911.	
	Sou. No. 2.	Loc. No. 2.	Sou. No. 2.	Loc. No. 2.	Sou. No. 2.	Loc. No. 2.	Sou. No. 2.	Loc. No. 2.	Sou. No. 2.	Loc. No. 2.
Jan.	26.00	25.00	16.15	18.10	16.26	17.00	17.25	18.50	14.25	15.00
Feb.	26.00	25.50	15.75	17.81	16.13	16.40	17.06	18.50	14.25	15.00
Mar.	26.00	25.75	15.50	17.50	15.05	16.15	16.30	17.80	14.25	15.00
Apr.	25.06	26.00	15.20	17.38	14.25	16.15	15.37	17.00	14.25	15.00
May	24.25	26.50	14.75	17.28	14.50	16.15	15.00	16.56	14.00	15.00
June	24.10	26.25	15.25	17.38	14.70	16.15	14.85	16.25	13.50	15.00
July	23.85	25.20	15.00	17.20	15.75	16.65	14.75	16.06	13.25	14.87
Aug.	23.00	24.50	15.25	17.00	16.38	16.78	14.31	16.00	13.45	14.50
Sept.	21.50	23.75	15.65	16.70	17.35	18.35	14.25	15.90	13.31	14.50
Oct.	20.95	22.10	15.75	16.50	17.88	18.50	14.25	15.56	13.25	14.46
Nov.	19.50	20.31	16.00	16.75	17.75	18.50	14.25	15.50	.....	.....
Dec.	17.00	18.55	16.25	17.00	17.45	18.50	14.25	15.50	.....	.....

## The Record of Production

## Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907—Gross Tons.

	1907.	1908.	1909.	1910.	1911.
Jan.	2,205,607	1,045,250	1,797,560	2,608,605	1,759,326
Feb.	2,045,068	1,077,740	1,707,340	2,397,254	1,794,509
Mar.	2,226,457	1,228,204	1,832,194	2,617,949	2,171,111
Apr.	2,216,558	1,149,602	1,738,877	2,483,763	2,064,086
May	2,295,505	1,165,688	1,883,330	2,390,180	1,893,456
June	2,234,575	1,092,131	1,930,866	2,265,478	1,787,566
July	2,255,660	1,218,129	2,103,431	2,148,442	1,793,068
Aug.	2,250,410	1,359,831	2,248,930	2,106,847	1,926,637
Sept.	2,183,487	1,418,998	2,385,206	2,056,275	1,977,102
Oct.	2,336,972	1,567,198	2,599,541	2,093,121	2,102,147
Nov.	1,828,125	1,577,854	2,547,508	1,909,780	.....
Dec.	1,234,279	1,740,912	2,635,680	1,777,817	.....

## Heat-Treated Steel Axles

A pamphlet of unusual interest because of the experimental data it presents has been prepared by the Carnegie Steel Company, Pittsburgh, with the title, "Heat-Treated Axles, Shafts and Similar Parts." It gives the average results of experimental tests made from finished axles, together with copies of the Carnegie specifications for various classes of axles. Those for the Carnegie heat-treated carbon steel axles are dated October 1, 1911. It is stated in the introduction to the reports of tests that since it was demonstrated that the breaking of axles was due as a rule not to lack of ductility, but to a too near approach of stresses to the elastic limit, axles have been made from a fairly hard grade of steel without special heat treatment, rather than from wrought iron and soft steel, as formerly. Increased loads and the very severe conditions imposed on motor axles have required material having higher resistance to stresses, yet sufficiently ductile to insure freedom from brittleness. The response of steel manufacturers has been the heat-treated axle.

Four different classes of product are referred to: Standard forged axles, which receive no special heat treatment subsequent to forging, this being the class most generally employed at present; annealed axles, which after forging and cooling are reheated to the proper temperature for refining the grain and then allowed to cool slowly; toughened axles, which after forging and cooling are reheated to approximately the same temperature as for annealing, quenched in some medium to refine the grain still further, and then reheated to a little lower temperature than before; high test axles, for which the treatment is similar to that employed for toughened axles except that the final "drawing back" or annealing temperature is slightly lower, giving elasticity and tensile

strength considerably higher and ductility somewhat lower than in toughened axles. It is stated that in the experiments no difference was observed between large and small axles, disproving the theory that for axles of the larger sizes it is necessary to bore out the center to insure complete penetration of the effects of heating and cooling operations. The conclusions derived from the tests detailed in the pamphlet are stated as follows:

Any of the heat treatments employed is beneficial.

Owing to the lower carbon, the mild grade is not affected by heat treatment to the same extent as the others.

To assure material of the highest quality, the medium and the hard grades should be heat treated.

The tensile tests do not seem to give an good an idea of the quality of material as do the torsion tests. In comparing the tensile and the torsion specimens, the ultimate strengths are comparable, but the elongation of the tensile specimen is not comparable with the number of twists of the torsion specimens. A very close relation is noticeable between the reduction of area of the tensile specimens and the number of twists of the corresponding torsion specimen. These two properties seem to be the true measure of the ductility.

The use of a large bending specimen is of no advantage.

Equally good results can be obtained with different sizes of axles, provided the proper care and attention are given.

On November 2 the No. 2 open hearth plant at the Homestead Steel Works of the Carnegie Steel Company, Homestead, Pa., made a new record, turning out 2474 tons of open-hearth steel in the 24 hours. On October 15, 1906, it turned out 2284 tons, which has been the record until now. The No. 2 plant has 16 50-ton furnaces and is under the direction of P. P. Rees, superintendent.

The Clinton Iron & Steel Company, Pittsburgh, started up its blast furnace November 4, making foundry pig iron.

# The Iron and Metal Markets

## A Comparison of Prices

### Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

Nov. 8, 1911.	Nov. 1, 1911.	Oct. 11, 1911.	Nov. 9, 1910.
<b>PIG IRON, Per Gross Ton:</b>			
Foundry No. 2 standard, Philadelphia	\$15.00	\$15.00	\$15.00
Foundry No. 2, Valley furnace	13.25	13.25	13.50
Foundry No. 2 Southern, Cincinnati	13.25	13.25	13.25
Foundry No. 2, Birmingham, Ala.	10.00	10.00	10.00
Foundry No. 2, at furnace, Chicago	14.10	14.35	14.50
Basic, delivered, eastern Pa.	14.50	14.50	14.50
Basic, Valley furnace	12.50	12.50	13.25
Bessemer, Pittsburgh	15.15	15.15	15.40
Gray forge, Pittsburgh	13.40	13.65	13.65
Lake Superior charcoal, Chicago	16.50	16.50	16.50

### COKE, CONNELLSVILLE,

Per Net Ton, at Oven:

Furnace coke, prompt shipment	1.50	1.50	1.50
Furnace coke, future delivery	1.55	1.55	1.60
Foundry coke, prompt shipment	1.80	1.80	1.80
Foundry coke, future delivery	2.00	2.00	2.00

### BILLETS, &c., Per Gross Ton:

Bessemer billets, Pittsburgh	20.00	20.00	20.00
Open hearth billets, Pittsburgh	19.00	19.00	19.00
Forging billets, Pittsburgh	24.00	24.00	25.00
Open-hearth billets, Philadelphia	22.40	21.40	21.40
Wire rods, Pittsburgh	25.50	26.00	26.00

### OLD MATERIAL, Per Gross Ton:

Iron rails, Chicago	14.50	14.50	13.75
Iron rails, Philadelphia	15.50	15.50	16.50
Car wheels, Chicago	12.00	12.00	12.50
Car wheels, Philadelphia	11.25	11.50	11.75
Heavy steel scrap, Pittsburgh	12.00	12.00	12.00
Heavy steel scrap, Chicago	9.50	9.50	10.00
Heavy steel scrap, Philadelphia	11.50	11.75	12.00

### FINISHED IRON AND STEEL,

Per Pound to Largest Buyers:

	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.20	1.20	1.22½	1.37
Iron bars, Pittsburgh	1.20	1.20	1.20	1.45
Iron bars, Chicago	1.15	1.15	1.20	1.35
Steel bars, Pittsburgh	1.10	1.10	1.15	1.40
Steel bars, tidewater, New York	1.26	1.26	1.31	1.56
Tank plates, Pittsburgh	1.15	1.15	1.20	1.40
Tank plates, tidewater, New York	1.31	1.31	1.36	1.56
Beams, Pittsburgh	1.15	1.15	1.20	1.40
Beams, tidewater, New York	1.31	1.31	1.36	1.56
Angles, Pittsburgh	1.15	1.15	1.20	1.40
Angles, tidewater, New York	1.31	1.31	1.36	1.56
Skelp, grooved steel, Pittsburgh	1.15	1.15	1.15	1.25
Skelp, sheared steel, Pittsburgh	1.25	1.25	1.25	1.35

### SHEETS, NAILS AND WIRE,

Per Pound to Largest Buyers:

	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.85	1.85	1.85	2.20
Wire nails, Pittsburgh	1.55	1.60	1.65	1.70
Cut nails, Pittsburgh	1.50	1.50	1.50	1.60
Barb wire, galv., Pittsburgh	1.85	1.90	1.95	2.00

### METALS,

Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.50	12.50	12.50	13.00
Electrolytic copper, New York	12.37½	12.37½	12.25	12.87½
Spelter, St. Louis	6.20	6.20	6.00	5.80
Spelter, New York	6.35	6.35	6.15	5.95
Lead, St. Louis	4.15	4.15	4.10	4.30
Lead, New York	4.25	4.25	4.25	4.40
Tin, New York	42.00	41.62½	41.25	36.25
Antimony, Hallett, New York	7.70	7.70	7.70	7.75
Tin plate, 100-lb. box, New York	\$3.64	\$3.64	\$3.84	\$3.64

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

## Prices of Finished Iron and Steel f.o.b.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c. base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.

Gauges under ¼ in. to and including 3-16 in. on thin-

nest edge.....10

Gauges under 3-16 in. to and including No. 8.....15

Gauges under No. 8 to and including No. 9.....25

Gauges under No. 9 to and including No. 10.....30

Gauges under No. 10 to and including No. 12.....40

Sketches (including all straight taper plates) 3 ft. and

over in length.....10

Complete circles, 3 ft. in diameter and over.....20

Boiler and flange steel.....10

"A. B. M. A." and ordinary firebox steel.....20

Still bottom steel.....30

Marine steel.....40

Locomotive firebox steel.....50

Widths over 100 in. up to 110 in., inclusive.....05

Widths over 110 in. up to 115 in., inclusive.....10

Widths over 115 in. up to 120 in., inclusive.....15

Widths over 120 in. up to 125 in., inclusive.....25

Widths over 125 in. up to 130 in., inclusive.....50

Widths over 130 in.....1.00

Cutting to lengths or diameters under 3 ft. to 2 ft., in-

clusive.....25

Cutting to lengths or diameters under 2 ft. to 1 ft., in-

clusive.....50

Cutting to lengths or diameters under 1 ft.....1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

**Structural Material.**—I-beams, 3 to 15 in.; channels,

3 to 15 in., and angles, 3 to 6 in. on one or both legs,

¼ in. and over, 1.15c. to 1.20c. Other shapes and sizes

are quoted as follows:

I-beams over 15 in.....Cents per lb.

H-beams over 18 in.....1.20 to 1.25

Angles over 6 in.....1.30 to 1.35

Angles, 3 in. on one or both legs, less than

¼ in. thick, plus full extras as per steel bar

card Sept. 1, 1909.....1.20 to 1.25

Tees, 3 in. and up.....1.20 to 1.25

Zees, 3 in. and up.....1.15 to 1.20

Angles, channels and tees, under 3 in., plus

full extras as per steel bar card Sept. 1, 1909.....1.20 to 1.25

Deck beams and bulb angles.....1.45 to 1.50

Hand rail tees.....2.00 to 2.15

Checkered and corrugated plates.....2.00 to 2.15

**Sheets.**—Makers' prices for mill shipments on sheets

of U. S. standard gauge, in carload and larger lots, on

which jobbers charge the usual discounts for small lots

from store, are as follows:

### Blue Annealed Sheets.

Nos. 3 to 8.....Cents per lb.

Nos. 9 and 10.....1.25 to 1.30

Nos. 11 and 12.....1.35 to 1.40

Nos. 13 and 14.....1.40 to 1.45

Nos. 15 and 16.....1.45 to 1.50

Nos. 17 and 18.....1.55 to 1.60

### Box Annealed Sheets, Cold Rolled.

Nos. 10 to 12.....One Pass. Three Pass.

Nos. 13 and 14.....1.50 to 1.55

Nos. 15 and 16.....1.55 to 1.60

Nos. 17 to 21.....1.60 to 1.65

Nos. 22, 23 and 24.....1.65 to 1.70

Nos. 25 and 26.....1.70 to 1.75

No. 27.....1.75 to 1.80

No. 28.....1.80 to 1.85

No. 29.....1.85 to 1.90

No. 30.....1.90 to 1.95

No. 31.....1.95 to 2.00

No. 32.....2.00 to 2.05

No. 33.....2.05 to 2.10

### Galvanized Sheets, of Black Sheet Gauge.

Nos. 10 and 11.....1.85 to 1.90

Nos. 12, 13 and 14.....1.95 to 2.00

Nos. 15, 16 and 17.....2.10 to 2.15

Nos. 18 to 22.....2.25 to 2.30

Nos. 23 and 24.....2.35 to 2.40

Nos. 25 and 26.....2.55 to 2.60

No. 27.....2.70 to 2.75

No. 28.....2.85 to 2.90

No. 29.....2.95 to 3.00

No. 30.....3.15 to 3.20

All above rates on sheets are f.o.b. Pittsburgh, terms

30 days net, or 2 per cent. cash discount in 10 days from

date of invoice, as also are the following base prices per

square for painted and galvanized roofing sheets, with

2½-in. corrugations.

### Corrugated Roofing Sheets, Per Square.

Gauge. Painted. Galvanized. Gauge. Painted. Galvanized.

29.....\$1.30 \$2.30 23.....\$2.35 \$3.45

28.....1.45 2.45 22.....2.55 3.65

27.....1.55 2.55 21.....2.75 4.00

26.....1.80 2.60 20.....3.00 4.30

25.....2.05 3.00 19.....4.60 5.65

24.....2.05 3.10 18.....4.85 6.45

**Wire Rods and Wire.**—Bessemer, open hearth and

chain rods, \$25.50 to \$26. Fence wire, Nos. 0 to 9, per

100 lb., terms 60 days, or 2 per cent. discount in 10 days,

# THE IRON AND METAL MARKETS

carload lots, to jobbers, annealed, \$1.35; galvanized, \$1.05. Carload lots, to retailers, annealed, \$1.45; galvanized, \$1.75. Galvanized barb wire to jobbers, \$1.85; painted, \$1.55. Wire nails, to jobbers, \$1.55.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 lb.

Nos.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	\$1.55	\$1.60	\$1.65	\$1.70	\$1.80	\$1.90	\$2.00	\$2.10
Galvanized	1.85	1.90	1.95	2.00	2.10	2.20	2.60	2.70

**Wrought Pipe.**—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 2, 1911:

Butt Weld.

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
¾ and 1 in.	73	53	68	48
1 in.	74	64	69	59
1½ in.	77	67	72	62
2 in.	80	72	75	67
2 in. to 3 in.	81	74	76	69

Lap Weld.

1½ and 1½ in.	..	68	61
2 in.	77	70	72
2½ to 4 in.	79	72	74
4½ to 6 in.	78	70	73
7 to 12 in.	76	66	71
13 to 15 in.	52	..	47

Butt Weld, extra strong, plain ends, card weight.

¾, 1, 1½ in.	70	60	65	55
2 in.	75	69	70	64
2½ to 4 in.	79	73	74	68
4½ to 6 in.	80	74	75	69

Lap Weld, extra strong, plain ends, card weight.

1½ in.	..	66	60
2 in.	76	70	71
2½ to 4 in.	78	72	73
4½ to 6 in.	77	71	72
7 to 8 in.	70	60	65
9 to 12 in.	63	55	60

Butt Weld, double extra strong, plain ends, card weight.

¾ in.	65	59	60	54
1 to 1½ in.	68	62	63	57
2 to 3 in.	70	64	65	59

Lap Weld, double extra strong, plain ends, card weight.

2 in.	66	60	61	55
2½ to 4 in.	68	62	63	57
4½ to 6 in.	67	61	62	56
7 to 8 in.	60	50	55	45

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld	will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld, as specified.
2, 2½ to 4 in. Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

**Boiler Tubes.**—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		Charcoal Iron.	
1½ to 2¼ in.	65	1½ in.	48
2½ in.	67½	1¾ to 2¼ in.	50
2¾ to 3¼ in.	72½	2½ in.	55
3½ to 4 in.	75	2¾ to 5 in.	60
5 to 6 in.	67½		
7 to 13 in.	65		

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2½ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

## Pittsburgh

PITTSBURGH, PA., November 8, 1911.—(By Telephone.)

**Pig Iron.**—With the prospect of lower ore prices next year, and probably lower freight charges on ore and coke, consumers of pig iron figure that prices are not likely to be any higher in the near future and are confining their purchases to small lots to cover actual needs. A fairly heavy tonnage of foundry iron is moving to consumers and the foundry stocks held by the furnaces are light. No large inquiries for pig iron are in the market. Prices continue weak, and gray forge has further declined. We quote Bessemer iron \$14.25; malleable Bessemer and basic, \$12.50; No. 2 foundry, \$13.25, and gray forge, \$12.50, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton. We note a sale of 1500 tons of gray forge at \$12.60, Valley, or \$13.50 Pittsburgh, for forward delivery, and 250 tons of forge for prompt shipment at \$12.50 Valley.

**Steel.**—Reports that contracts for Bessemer sheet

bars have been adjusted to the basis of \$30 Pittsburgh for October shipment are denied. New demand for steel is dull, but specifications against contracts for billets and sheet and tin bars are fairly heavy. We quote open hearth billets, \$19; Bessemer billets, \$20; open hearth sheet bars, \$20; Bessemer sheet bars, \$21; and forging billets, \$24, f.o.b. at maker's mill.

**Steel Rails.**—We are advised that the Norfolk & Western Railroad has placed a contract for 25,000 tons of standard rails for 1912 delivery, a part of the tonnage to be rolled at the Edgar Thomson rail mills of the Carnegie Steel Company, at Bessemer, Pa.

(By Mail.)

The steel trade is simply marking time, consumers placing orders only for what they must have, but it is evident that when they feel that prices are as low as they will go there will be a heavy buying movement. Prices on pig iron have declined further and both open-hearth and Bessemer steel are slightly weaker. There is no doubt that the low prices ruling have materially increased the volume of new business, but the mills claim that they get little or no profit. The coke market is steady and so is scrap, with more moving from dealers to consumers than for some time. Prices on ferro-silicon continue to advance, having reached \$64, Pittsburgh, or higher.

**Ferromanganese.**—Efforts made during the past week to shade \$38, Baltimore, on 80 per cent. have not been successful. An open-hearth interest in the Wheeling district that came in the market about a week ago for 600 tons for delivery over all of 1912 found the market very strong and closed for about 300 tons at about \$38.25, Baltimore. Another interest at Canton, Ohio, is in the market for 500 tons for delivery in the first half of 1912. For delivery in the first half of next year we quote \$38.25 to \$38.50, Baltimore, the freight rate for delivery in the Pittsburgh district being \$1.95 a ton.

**Ferrosilicon.**—Prices on 50 per cent. continue to advance, the material being pretty well under control by two leading interests. It is now held at \$64, Pittsburgh, or higher. We quote: 10 per cent., \$22; 11 per cent., \$23, and 12 per cent., \$24, f.o.b. cars Jackson, Ohio, or Ashland, Ky.

**Skelp.**—A local mill reports a sale of about 1000 tons of narrow grooved steel skelp at 1.15c., and a mill outside the Pittsburgh district has made a sale of about 1500 tons of narrow grooved at 1.10c. at mill. We quote grooved steel skelp at 1.15c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.40c., and sheared iron skelp, 1.60c., all for delivery at consumers' mills in the Pittsburgh district.

**Wire Rods.**—The new demand is very dull, consumers being covered by contracts which in some cases run over the first half of next year. The market is weak and we quote Bessemer, open-hearth and chain rods at \$25.50 to \$26, f.o.b. Pittsburgh.

**Steel Rails.**—No important orders for standard sections have been placed, but the new demand for light rails is fairly active. The Carnegie Steel Company is receiving quite a good many orders for light rails for export. We quote light rails as follows: 8 and 10-lb. sections, 1.295c.; 12 and 14-lb., 1.205c.; 16, 20 and 25-lb., 1.16c.; 30 and 35-lb., 1.15c.; 40 and 45-lb., 1.105c.

**Structural Material.**—It is learned here that the order placed with the American Bridge Company for part of the Hell Gate Bridge, New York City, calls for about 36,000 tons. The same company has taken 365 tons for the Flannery Building in this city, and the Jones & Laughlin Steel Company has taken about 700 tons for New York Central terminals in New York City. The Penn. Bridge Company, Beaver Falls, Pa., has taken about 200 tons for a new steel building for the Hazel-Atlas Glass Company, Washington, Pa. We continue to quote beams and channels up to 15 in. at 1.15c. to 1.20c., Pittsburgh, the lower price being named only on desirable orders.

**Plates.**—Orders for steel cars include 3000 steel underframe box cars for the Pittsburgh & Lake Erie, taken by the Pressed Steel Car Company, which has also received an order for 600 gondolas for the Southern. The Standard Steel Car Company has taken an order for 2000 steel hoppers for the Chesapeake & Ohio. The Big Four is reported to have placed 2000 steel underframe cars and the Canadian Northern 1000. The Jones & Laughlin Steel Company is making quite heavy

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shipments of plates for Panama Canal work and reports that its plate mills are fairly busy. We quote wide and narrow plates at 1.15c. on ordinary orders and 1.20c. in small lots, f.o.b. at mill. On a very desirable contract for large tonnage and attractive rolling specifications it is probable that the lower price named might be slightly shaded by one or two mills.

**Sheets.**—Large consumers are now anxious to place contracts for long delivery at present prices; in some cases through the first half of next year. Some business of this nature has been taken from a few very large consumers, but as a rule the makers are not willing to sell at present low prices for longer than two or three months' delivery. The mills generally are operating to about 60 per cent. of capacity. Actual orders placed in the second half of October showed an increase over the first half. It is stated that quite a good tonnage is being sold for export. Prices are unchanged.

**Tin Plate.**—Leading consumers of tin plate are not showing much eagerness to place contracts for their requirements for delivery in the first quarter and first half of 1912, even at the lower price of \$3.40 per base box. The feeling is that, under present conditions, nothing is to be gained by placing early contracts for long delivery. Some consumers, however, have placed fairly large orders for the first half. The mills will not start to run on these contracts until December or January, and, as business has been dull for some time, the natural result is that operations of the mills are on a steadily reducing rate. The leading mills are not operating at present to more than 50 per cent. of capacity. The Jones & Laughlin Steel Company expects to have its second unit of 12 mills ready for operation about December 1. Foundations are in for the third unit of 12 mills, which will not be completed until April or May. The American Sheet & Tin Plate Company is operating four sheet mills, one jobbing and one plate mill at its new works at Gary, Ind. We quote 100-lb. cokes, 14 x 20, at \$3.40 per base box, f.o.b., Pittsburgh.

**Bars.**—Consumers are placing only such orders as are required to meet current needs. Specifications against contracts are coming in at a fairly satisfactory rate, but none of the leading steel bar makers is operating to full capacity. Prices on both iron and steel bars are lower than they have been in some years, but this has not stimulated the demand. We quote steel bars at 1.10c. for very desirable orders and 1.15c. in small lots. Iron bars continue to rule at 1.20c. to 1.25c. at maker's mill, depending on the order, freight added to point of delivery.

**Merchant Steel.**—Orders entered by the mills for shipment in the last half of October showed a slight increase as compared with the first half. Shipments by the mills are fairly heavy, but specifications against contracts are coming in at only a moderate rate.

**Hoops and Bands.**—The new demand is quiet, and specifications against contracts are unsatisfactory. We quote steel hoops at 1.30c. to 1.35c. and bands at 1.10c. to 1.15c., extras on the latter as per the steel bar card.

**Rivets.**—A slightly better demand is noted for both structural and boiler rivets and more actual business is reported than for some time. Specifications against contracts are not very satisfactory. We quote structural rivets at 1.50c. and boiler rivets at 1.60c. f.o.b., Pittsburgh, but on desirable orders these prices are shaded.

**Wire Products.**—Successive lower prices made on wire and wire nails do not stimulate the demand, jobbers and retailers still placing orders only for such quantities as are needed to maintain stocks or to meet the requirements of consumers. While the regular price of wire nails remains at \$1.60 and barb wire at \$1.40, the mills are accepting orders at \$1.55 on wire nails and \$1.35 on plain wire. Competition for delivery at Southern points is very keen, the mills located on the Ohio River quoting prices f.o.b. at mill plus freight to Southern points which represent, delivered, less than \$1.60 on wire nails at Pittsburgh plus freight. We quote wire nails at \$1.55 to \$1.60; cut nails \$1.50; galvanized barb wire \$1.90; painted, \$1.55 to \$1.60; annealed fence wire \$1.35 to \$1.40, and galvanized fence wire \$1.65 to \$1.70, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

**Spelter.**—The market continues very firm, the demand being reported heavier than for some time. We quote prime grades of Western at 6.25c., East St.

Louis, equal to 6.37½c., Pittsburgh. A local consumer bought last week about 100 tons for November and December shipment at 6.20c., East St. Louis.

**Shafting.**—Orders are reported slightly larger and specifications from the agricultural implement makers are coming in at a heavier rate. Consumers realize that present prices are extremely low, and in some cases are willing to contract into next year, but as a rule the makers are refusing to accept contracts for delivery through the first half at present prices and will only sell for delivery in this month and December. We quote cold-rolled shafting at 60 and 10 and 65 per cent. off in carload and larger lots delivered in base territory.

**Iron and Steel Scrap.**—The feeling in the scrap market is a little better. More material is moving from dealers to consumers, probably due to the low prices. The scrap list of the Pennsylvania Railroad issued last week asked for bids on about 18,000 tons, including 8,000 tons of heavy melting steel. Some dealers believe that prices will improve toward the end of this year or very early next year and are not willing to make sales for extended delivery. We note sales of some 2,000 tons of heavy steel scrap at about \$12.10 delivered, also sales of 500 tons of borings at \$8 delivered. Prices are perhaps a trifle firmer but are not any higher. Dealers are quoting as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery.....	\$12.00
No. 1 foundry cast.....	\$12.50 to 12.75
No. 2 foundry cast.....	11.75 to 12.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district.....	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.....	12.50 to 12.75
No. 1 railroad malleable stock.....	11.50 to 11.75
Grate bars.....	9.00 to 9.25
Low phosphorus melting stock.....	15.00 to 15.25
Iron car axles.....	20.50 to 21.00
Steel car axles.....	16.00 to 16.25
Locomotive axles.....	22.00 to 22.50
No. 1 busheling scrap.....	11.00 to 11.25
No. 2 busheling scrap.....	7.00 to 7.25
Old car wheels.....	12.00 to 12.25
*Cast iron borings.....	8.00 to 8.15
*Machine shop turnings.....	8.75
†Sheet bar crop ends.....	13.75 to 14.00
Old iron rails.....	14.50 to 14.75
No. 1 wrought scrap.....	12.00 to 12.25
Heavy steel axle turnings.....	9.75 to 10.00
Stove plate.....	9.00 to 9.25

\*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

**Railroad Spikes.**—The railroads are placing orders a little more freely in the desire to finish work before severe weather sets in. An Eastern line recently specified for 1500 kegs and a Western line for about 800 kegs. We quote railroad spikes at \$1.40 in base sizes for carload and larger lots, f.o.b. Pittsburgh.

**Merchant Pipe.**—The Doherty interests of Los Angeles, Cal., propose to take natural gas from the Santic fields and pipe it into the city of Mexico and adjoining centers of population. The scheme is to lay a screw line, which, after the gas is exhausted, can be used for oil. Only preliminary work has been done so far, but if the project should be successful it will require 250 miles or more of 6-in. and larger sizes of pipe. In the volume of new business the pipe trade is reported good, actual bookings by the leading mills in October showing an increase over September. One leading mill reports that it is operating to about 85 per cent. of capacity, and is pretty well fixed with orders for this and next month. New lists of discounts on oil country goods for the various oil fields and also for the California field have recently been issued. Present discounts on both iron and steel pipe are stated to be firmly held.

**Boiler Tubes.**—The new demand for locomotive tubes has been better, but for merchant tubes continues very dull. Regular discounts on both locomotives and merchant tubes are more or less shaded, and probably will continue to be until the volume of new business shows an increase.

**Coke.**—Some inquiries are out for furnace coke for delivery in the first half of next year and from \$1.70 to \$1.75 for standard grades, per net ton at oven, is being quoted on these inquiries, but so far little actual business has been closed. We note, however, that a local coke interest has taken a contract for about 9,000 tons per month for all of 1912 at \$1.80 at oven, and a contract for about 12,000 tons a month for delivery in the

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first half at \$1.75. These prices are regarded as being above what the actual coke market will be next year, but the buyers in both cases specified particular makes of furnace coke which have a very high reputation. Sales of 3500 to 4000 tons of spot furnace coke have been made at \$1.50 per net ton at oven. We quote standard makes for furnace coke for spot shipment at \$1.50 to \$1.55 and for November and December shipment at \$1.55 to \$1.60, per net ton at oven. Standard makes of furnace coke for the first half are held at about \$1.70 to \$1.75. We quote standard makes of 72-hr. foundry coke for spot shipment at \$1.85 to \$2 and on contracts for first half at \$2.10 to \$2.40 per net ton at oven.

The Ohio Iron & Metal Company, whose main office is and will continue to be in the First National Bank Building, Chicago, Ill., corrects a statement made in the last issue of *The Iron Age*. It has discontinued its branch offices at Philadelphia and Cleveland but retains its office in the Farmers' Bank Building, Pittsburgh, in charge of H. D. and H. G. Stalnaker. It also continues its branch at 30 Church street, New York City, in charge of L. Deutsch. The publication of the erroneous statement is greatly regretted. The information came from what appeared to be an authentic source and, therefore, was not verified.

### Chicago

CHICAGO, ILL., November 8, 1911.—(By Telegraph.)

From those sources to which the inquiries of railroads for cars and rails have gone a moderate feeling of encouragement has emanated. The general feeling among the manufacturers, however, reflects a disposition to reduce their operation to as light a schedule as possible. Buyers of steel and pig iron, while satisfied with the prices at which material can be bought, are reluctant to increase beyond their positive need either their stocks of raw material or manufactured products. The tonnage moving in the market, therefore, continues to be a hand-to-mouth business and insufficient in volume to establish any degree of firmness in the position of mills and furnaces. In this market the past week seems to have brought out an accentuating of local competition. As a result the decreasing margin which thus far has held the interest of Eastern shippers to this territory has been eliminated in certain instances, particularly as regards plates. While there has been no general decline from the prevailing level of prices, which may be considered as existing on the basis of 1.33c., Chicago, for plates and shapes and 1.28c., Chicago, for steel bars, the concessions from these prices have been frequent and irregular. Sheets have shared this general condition and wire products have yielded in many directions under pressure of competition. The market, as applied to pig iron, has lost most of its elasticity and local Northern iron can be purchased on the basis of \$14, f.o.b. furnace. In general the low prices prevailing have brought out less tonnage in the West than is reported from Eastern points and railroad purchasing of equipment is limited to small lots.

**Pig Iron.**—The local pig iron market continues to sag under its own weight. Inquiry is very limited and sales are restricted to very small orders. It is now conceded that a price of \$14, f.o.b. furnace, for No. 2 local iron can be obtained, although the asking price of \$14.50 has not disappeared. For Southern iron the basis of \$10, Birmingham, for No. 2 continues to rule, but the possibilities of obtaining a premium for forward delivery are increasingly weak. The fact that buying is almost entirely for the immediate needs of consumers is contributing to a uniformly prompt movement of iron on order which is perhaps the most favorable feature of the situation. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal.....	\$16.50 to \$17.00
Northern coke foundry, No. 1.....	14.75 to 15.00
Northern coke foundry, No. 2.....	14.10 to 14.50
Northern coke foundry, No. 3.....	14.00 to 14.35
Northern Scotch, No. 1.....	16.00
Southern coke, No. 1 foundry and No. 1 soft.....	14.85 to 15.10
Southern coke, No. 2 foundry and No. 2 soft.....	14.35 to 14.60
Southern coke, No. 3.....	14.10 to 14.25
Southern coke, No. 4.....	13.85 to 14.10
Southern gray forge.....	13.60 to 13.85
Southern mottled.....	13.60 to 13.85
Malleable Bessemer.....	14.35 to 14.50
Standard Bessemer.....	17.00
Basic.....	14.75
Jackson Co. and Kentucky silvery, 6 per cent.....	16.40
Jackson Co. and Kentucky silvery, 8 per cent.....	17.40
Jackson Co. and Kentucky silvery, 10 per cent.....	18.40

(By Mail.)

**Rails and Track Supplies.**—While inquiries from the railroads for next year's requirements of rails were to be expected about this time, still the fact that such inquiries have been received has been taken as an occasion for more than usual encouragement. One sale of a round tonnage is reported to a Western trunk line and other purchases are under contemplation. Western mills are sorely in need of rail business and orders received at this time will be more than timely. Such orders are expected to carry corresponding contracts for track fastenings. We quote standard railroad spikes at 1.60c., base; track bolts with square nuts, 2c. to 2.10c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c., Chicago.

**Structural Material.**—The lettings of contracts for fabricated steel the past week aggregated 8281 tons and included 2400 tons for the Rice Hotel at Houston, Tex., taken by the Cambria Steel Company; a number of plate girder and I-beam spans for the Chicago, Burlington & Quincy Railroad awarded to the McClintic-Marshall Construction Company; 1112 tons for the Walker Building, Salt Lake City, to the Minneapolis Steel & Machinery Company; the McClurg apartments, Chicago, to the Holmes & Pyott Company, 1000 tons; the Merchants National Bank Building, Indianapolis, 2550 tons, to the Noelke-Richards Iron Works; buildings for the Conrad Schrier Company, Sheboygan, Wis., 355 tons, to the Worden-Allen Company; 240 tons for a highway at Gridley, Cal., to the American Bridge Company. Mills in this territory are engaged for the most part with the rolling of shapes for steel cars and architectural contracts, but to some extent with railroad bridge steel. This tonnage is considerably below capacity and low prices continue without bringing out evidences of firmer conditions ahead. We quote for plain shapes, Chicago delivery, mill shipment, 1.33c., and from store, 1.65c.

**Plates.**—Because of the keenly competitive situation which has developed in this market, Eastern plate mills have found prices too low to admit of taking much of the business offered. Two makers that are ordinarily strong factors are reported to have withdrawn temporarily. While this might give rise to a hope for firmer conditions, the local mills are still sufficiently keen in the pursuit of orders to keep prices at as low a level as at any time recently recorded. The lowest quotations are being made on narrower widths, for which prices equivalent to 1.10c., Pittsburgh, have been made. For ordinary specifications quotations \$1 a ton higher are usual. We quote for Chicago delivery, mill shipment, 1.33c., and from store, 1.65c.

**Sheets.**—The available tonnage of sheets in this market, while sufficient to attract the lowest quotations from the mills, is not large enough to satisfy all of the capacity. As a result producers are still unable to find their firm footing upon which to resist the pressure to lower quotations and desirable offers of business bring out material concessions. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.03c. to 2.08c.; No. 28 galvanized, 3.03c. to 3.08c.; No. 10 blue annealed, 1.53c. to 1.58c. Prices from store, Chicago, are: No. 10, 1.90c. to 2c.; No. 12, 1.95c. to 2.05c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

**Bars.**—Eastern competition apparently has been eliminated to a great extent as a factor in establishing the current local market. Any regularity which may have existed in prices for bars has disappeared and the quotation necessary to take spot shipment business is usually forthcoming. The market has apparently dropped below the level at which bar mills working from purchased billets can compete. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.17½c. to 1.20c. From store, soft steel bars, 1.55c. to 1.60c., Chicago.

**Wire Products.**—Pressure toward lower prices for wire products seems to be directed chiefly upon wire nails, the movement of which has been backward, and upon plain wire. For the former 1.78c. at Chicago is a quotation necessary to take ordinary business, and, in many directions, buyers are insisting on concessions from this quotation. The same is true of plain wire at 1.58c. Woven wire fence continues more active than other lines, although some slowing down in this direction is noticed. Jobbers' carload prices, which are also

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quoted to manufacturing buyers, are as follows, per 100 lb.: Plain wire, No. 9 and coarser, base, \$1.58 to \$1.63; wire nails, \$1.78 to \$1.83; painted barb wire, \$1.78 to \$1.83; galvanized, \$2.08 to \$2.13; polished staples, \$1.78 to \$1.83; galvanized, \$2.08 to \$2.13, all Chicago.

**Cast Iron Pipe.**—The season, ordinarily quiet as regards cast iron pipe, is not an exception at this time. Prospects for the coming spring are, however, unusually bright, and among the cities already preparing for large pipe installations are Sioux Falls, Iowa, and Omaha, Neb. Current municipal lettings include 200 tons for Mound City and 300 tons for Hill City, Kan. We quote as follows, per net ton, Chicago: Water pipe, 4-in., \$26.50; 6 to 12-in., \$24.50; 16-in. and up, \$24, with \$1 extra for gas pipe.

**Old Material.**—Values of various grades of old materials, under the present market conditions, change with every sale. Melters who purchase a tonnage at one price, when they again enter the market usually do so with a lower offer. Practically no local consumer may be considered as continuously in the market. The movement of scrap is correspondingly limited and uncertain. Lower quotations than obtained a week ago are, at this writing, the top of the market. The railroad offerings of scrap advertised for closing during the present week include 6000 tons from the Atchison, Topeka & Santa Fé, 800 tons from the Wabash Railroad, 1600 tons from the Michigan Central and 250 tons from the Toledo, St. Louis & Western. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails .....	\$14.50 to \$15.00
Old steel rails, rerolling .....	12.00 to 12.50
Old steel rails, less than 3 ft. ....	10.75 to 11.25
Relaying rails, standard section, subject to inspection .....	24.00
Old car wheels .....	12.00 to 12.50
Heavy melting steel scrap .....	9.50 to 10.00
Frogs, switches and guards, cut apart. ....	9.75 to 10.25
Shoveling steel .....	9.00 to 9.50
Steel axle turnings .....	8.00 to 8.50

The following quotations are per net ton:

Iron angles and splice bars .....	\$11.75 to \$12.25
Iron arch bars and transoms .....	13.00 to 13.50
Steel angle bars .....	8.75 to 9.25
Iron car axles .....	16.75 to 17.25
Steel car axles .....	15.25 to 15.75
No. 1 railroad wrought .....	10.00 to 10.25
No. 2 railroad wrought .....	9.00 to 9.25
Steel knuckles and couplers .....	9.00 to 9.50
Steel springs .....	9.50 to 10.00
Locomotive tires, smooth .....	13.50 to 14.00
Machine shop turnings .....	5.75 to 6.25
Cast and mixed borings .....	5.00 to 5.50
No. 1 busheling .....	7.75 to 8.00
No. 2 busheling .....	5.75 to 6.25
No. 1 boilers, cut to sheets and rings .....	6.50 to 7.00
Boiler punchings .....	12.00 to 12.50
No. 1 cast scrap .....	10.00 to 10.50
Stove plate and light cast scrap .....	8.50 to 9.00
Railroad malleable .....	9.50 to 10.00
Agricultural malleable .....	8.50 to 9.00
Pipes and flues .....	7.00 to 7.50

### Philadelphia

PHILADELPHIA, November 7, 1911.

Transactions have been comparatively light, although the sentiment of the trade is toward better conditions. The pig iron market continues to drag, although prompt foundry grades are scarce. While in finished products the volume of business taken has been smaller, sheets are an exception, aggregate orders having been heavier. Old material shows a trifle more movement, but usually at lower prices. Coke remains quiet.

**Iron Ore.**—Practically an entire absence of demand is reported. The disposition of consumers is to await further developments with the hope that conditions may lead to lower prices for next year's supply.

**Pig Iron.**—The bulk of the sales has consisted of small quantities for comparatively early shipment. A number of the producers in this district are now pretty well sold up for their output at the present productive rate for the next month or two, as a result of which moderate lots purchased are frequently divided among several makers. The most active inquiry in foundry grades comes from the cast iron pipe makers. Negotiations are still pending on the part of one interest for a large block of Southern iron, while a new inquiry from another maker has come out for 3000 tons, half No. 3 and half forge, for delivery early next year. Odd lots continue to be taken by most of the Delaware River Pipe foundries, one sale of 1000 tons being reported, but most of the transactions have been in small lots. The top price for off irons for pipe foundry

use is now stated to be \$14.25, delivered. Sales of moderate lots of low grade Virginia foundry iron to cast iron pipe makers in that district are reported at \$12, furnace. The leading interest announces a change in quotations for foundry grades for delivery over the remainder of the year, \$12.25 at furnace being now quoted, representing a reduction of 25 cents a ton for that delivery. A number of other sellers, however, maintain the \$12.50 basis for deliveries extending over the next three months. Small sales of coke malleable for prompt delivery are reported to consumers in this district at close to \$16.65, delivered. The demand for forge iron from rolling mills in this territory has been less pronounced. Steel making grades are in but little demand. It is interesting to note that, while foundries are urging deliveries on foundry grades, some steel makers are making efforts to defer deliveries of basic iron contracted for shipment this year. In some cases the quantities involved are of considerable size. Nevertheless negotiations are still pending for several blocks of basic iron, both for this year and early 1912. Small sales of standard analysis low phosphorus iron to consumers in this district are reported at \$20, delivered. The general range of pig iron prices for delivery in buyers' yards in this vicinity shows practically no change, the following quotations being named for shipments covering the next 60 days or extending into or through the first quarter of next year.

Eastern Pennsylvania No. 2 X foundry .....	\$15.00 to \$15.25
Eastern Pennsylvania No. 2 plain .....	14.75 to 15.00
Virginia foundry .....	15.00 to 15.50
Gray forge .....	14.25 to 14.50
Basic .....	14.50
Standard low phosphorus .....	20.00

**Ferroalloys.**—Some little business is still before the trade in ferromanganese and, while \$38.50, Baltimore, is named for 80 per cent., and firmly held by the majority of sellers, reports that concessions can be had are heard. Fifty per cent. ferrosilicon is firm at \$62, delivered, with an upward tendency indicated. We quote furnace ferrosilicon, within Bessemer limits as to phosphorus and sulphur, at \$27.30 to \$28.30, delivered here.

**Billets.**—Makers in this district have firmed up somewhat on prices of basic open-hearth rolling billets, and now name \$22.40, delivered here, for that grade. Concessions from this basis do not appear to be available, although the market has not been tested by any sizable inquiry. A small lot demand continues to be reported. There is no change in the forging billet situation, ordinary grades being quoted at \$26.50 to \$27.50, according to specifications, delivered in this district.

**Plates.**—Mills are able to maintain about an even rate of production, although orders and specifications against contracts come out irregularly. Some inquiry is noted for car material, while one for upward of 1000 tons of boat plates has just come out. Orders are usually for small lots, although some fair specifications for bridge, building and boiler plates have developed. Prices show a wider range, and not all makers will meet the low quotations named by some mills for desirable business. For delivery in this district ordinary plates range from 1.30c. to 1.40c., the inside figure representing the competitive price for attractive business, while the outside price is frequently obtained for small lots.

**Structural Material.**—Orders for plain shapes are reported less numerous. Contracts for fabricated work have also been less active. The contract for the new Municipal Convention Hall is held up pending argument for an injunction restraining the municipal authorities from proceeding with it. Spreckel's sugar refinery has an inquiry out for a new warehouse, which will require about 500 tons, while one of the local shipyards is asking for quotations on 400 tons of boat shapes. Several of the pending bridge contracts have been placed and some moderate business is still pending. Quotations on plain material vary from 1.30c. to 1.40c., the inside figure applying on sharply competitive business, while for ordinary current orders 1.35c. to 1.40c., delivered, about represents the market.

**Sheets.**—Mills report a better run of orders and are better fixed as to rolling schedules than for some time. Orders are not usually large, but buyers are looking farther ahead and ordering accordingly. Prices also show greater firmness, and while Western sheets are available at 2.05c. for No. 28 gauge, delivered here, Eastern mills making smooth loose rolled sheets easily

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obtain an advance of  $\frac{1}{4}$ c. to  $\frac{1}{2}$ c. per lb. for such material for prompt shipment.

**Bars.**—The demand for iron bars has been light, and while prices are reported weak insufficient inquiry is coming out to test prices. For the general run of business quotations for iron bars range from 1.20c. to 1.25c., delivered here. While specifications on steel bars are reported comparatively good new business is quiet, with 1.25c., delivered here, representing the market on ordinary local business.

**Coke.**—Moderate sales of foundry and heating coke are reported, together with some contracting for next year's supplies. As a rule, however, transactions are confined to small prompt lots. While some inquiry for furnace coke for 1912 shipment is reported the business closed has been closely confined to prompt lots. Quotations are practically unchanged, the following range, per net ton, delivered in buyers' yards in this district, representing the market:

Connellsville furnace coke.....	\$3.65 to \$4.05
Foundry coke.....	4.15 to 4.50
Mountain furnace coke.....	3.40 to 3.65
Foundry coke.....	3.95 to 4.40

**Old Material.**—While the market in the usually active grades has been quiet transactions in what are generally termed special grades, such as steel and iron axles and iron rails, have been more active, sales being in lots of a few hundred tons and usually at lower prices than recently quoted. A round lot purchase of wrought iron pipe is also reported. Heavy melting steel has developed an easier tendency, and while railroad steel commands \$12, delivered, less desirable grades are available at \$11.50. A sale of several hundred tons of No. 1 wrought scrap at \$14, delivered, is also reported. Consumers and merchants are now busy figuring on the railroad lists, which are about the usual proportions. The following range of prices about represents quotations at which the ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to \$1.35c. per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap.....	\$11.50 to \$12.00
Old steel rails, rerolling (nominal).....	12.50 to 13.00
Low phosphorus heavy melting steel scrap.....	15.50 to 16.00
Old steel axles.....	17.00 to 17.50
Old iron axles.....	21.00 to 21.50
Old iron rails.....	15.50 to 16.00
Old car wheels.....	11.25 to 11.75
No. 1 railroad wrought.....	13.75 to 14.25
Wrought iron pipe.....	10.75 to 11.25
No. 1 forge fire.....	9.50 to 10.00
No. 2 light iron (nominal).....	6.00 to 6.50
Wrought turnings.....	8.00 to 8.25
Cast borings.....	7.50 to 7.75
Machinery cast.....	12.25 to 12.75
Railroad malleable (nominal).....	11.00 to 11.50
Grate bars, railroad.....	9.25 to 9.75
Stove plate.....	9.25 to 9.75

### Birmingham

BIRMINGHAM, ALA., November 6, 1911.

**Pig Iron.**—A marked scarcity of No. 4 foundry and gray forge seems to have been an item of particular interest here this past week, these grades commanding a slight premium as compared with the prices of other grades. One interest reports the sale of approximately 3500 tons last week, while another reports the sale of 2000 tons, from which it will be seen that the business is mostly made up of small orders for nearby shipment. The buyers do not seem anxious to rush in and cover their requirements for the first half of next year, and it would appear that the sellers are not at all eager to book business for such delivery. It is not anticipated that any large buying movement will soon materialize. Prices remain quotable per ton of 2240 lb. f. o. b. cars, Birmingham furnace yards, as follows:

No. 1 foundry and No. 1 soft.....	\$10.50
No. 2 foundry and No. 2 soft.....	10.00
No. 3 foundry.....	9.50
No. 4 foundry.....	9.25
Gray forge.....	9.00

**Cast Iron Pipe.**—The foundries now running are operating at a most satisfactory rate and with some margin of profit, considering the prices at which they can buy iron for prompt delivery. There is not a single inquiry of any moment before the trade this week, but the foundries seem very well satisfied with conditions. Prices on single car orders remain as follows, per net ton, f.o.b. cars at foundries in the Birmingham district: 4 to 6-in., \$23; 8 to 12-in., \$22; over

12-in., average, \$21, with gas pipe taking its usual differential of \$1 a ton higher.

**Old Material.**—There has been some little trading but not enough to materially change conditions. The dealers seem a little bit better satisfied, however, than they were some weeks ago, and there is some hope of an improvement in this trade. Prices are still quotable as follows f.o.b. dealers' yards, per gross ton:

Old iron axles (light).....	\$12.50 to \$13.00
Old steel axles (light).....	11.50 to 12.00
Old iron rails.....	11.50 to 12.00
No. 1 railroad wrought.....	10.00 to 10.50
No. 2 railroad wrought.....	8.50 to 9.00
No. 1 country wrought.....	6.50 to 7.00
No. 2 country wrought.....	6.00 to 6.50
No. 1 machinery, cast.....	8.50 to 9.00
No. 1 steel.....	8.00 to 8.50
Tram car wheels.....	7.50 to 8.00
Standard car wheels.....	9.00 to 9.50
Light cast and stove plates.....	6.00 to 6.50

**Coal and Coke.**—Cooler weather has caused a marked increase in the demand for domestic coal, and this has been reflected slightly in the demand for steam coal. The movement is very satisfactory, with some scarcity of certain kinds of railroad equipment for coal. The New Orleans trade is again getting coal from this district, which is quite a help to the producers here. Coke prices are fairly firm, especially on the best brands, which are held at \$3 to \$3.50 for Alabama coke and \$2 to \$2.25 for the best brands of Virginia coke f.o.b. oven.

### Cincinnati

CINCINNATI, OHIO, November 8, 1911.—(By Telegraph.)

**Pig Iron.**—So far as big business is concerned this is rather a lean market just now, although the usual number of small orders are being booked. The most encouraging feature to report is the general urgent demand for prompt shipments on contracts. As many of these contracts expire soon at least a temporary improvement may be expected before the end of the year. However, consumers will probably follow the present policy of buying only for immediate requirements, letting the future take care of itself. A central Indiana melter is asking for 500 tons of high silicon iron, for first half delivery, and for the same shipment a Michigan manufacturer wants 1000 tons of malleable. For first quarter shipment an eastern Ohio consumer is asking for 600 tons of No. 2 foundry. Several small sales of No. 4 Southern are reported at \$9.25, Birmingham. A local agency also reports the sale in St. Louis territory of a special brand of Southern iron at \$11 at furnace. About 200 tons of No. 2 Northern foundry went to a southern Ohio customer at \$13, Ironton, for this year's shipment. We continue our quotations of \$10, at furnace, for Southern No. 2 foundry, \$13 for Northern No. 2 foundry and \$13 for malleable. A pipe company has out an inquiry for 1000 tons of high manganese that is expected to be closed this week. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows, for prompt shipment:

Southern coke, No. 1 foundry and 1 soft.....	\$14.00 to \$14.25
Southern coke, No. 2 foundry and 2 soft.....	13.25 to 13.75
Southern coke, No. 3 foundry.....	12.75 to 13.25
Southern coke, No. 4 foundry.....	12.50 to 13.00
Southern gray forge.....	12.50 to 13.00
Ohio silvery, 8 per cent. silicon.....	16.95 to 17.20
Lake Superior coke, No. 1.....	14.70 to 14.95
Lake Superior coke, No. 2.....	14.20 to 14.45
Lake Superior coke, No. 3.....	13.70 to 13.95
Basic, Northern.....	14.20 to 14.45
Standard Southern car wheel.....	25.50 to 25.75
Lake Superior car wheel.....	19.00

(By Mail.)

**Coke.**—New business is very scarce, and as prices have been maintained lately on a uniform basis small quick shipment orders are frequently placed without asking for quotations. Furnace coke is quoted in the Connellsville field at \$1.50 to \$1.55 per net ton at oven, but Wise County and Pocahontas producers are asking from 10c. to 15c. per ton above those figures for this year's shipment. Foundry grades in all three districts are procurable between \$1.85 and \$2 for prompt movement. The usual premium of about 10 per cent. above prompt shipment quotations is asked on long time contract business.

**Finished Material.**—Reports from practically all sources indicate very little change in the volume of business. Orders are mainly small, although it is stated that structural material has shown a little improvement in the past few days. Steel bars do not appear to

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be as weak in this territory as in other markets, and no business is reported below 1.10c., Pittsburgh, while a number of small orders have been placed at 1.15c. The local warehouse price on steel bars is from 1.55c. to 1.60c., and on structural material, cut to lengths, if desired, 1.65c. to 1.70c.

**Old Material.**—Reports from all sources show that the market is weaker and slower. No large amounts of scrap material are being contracted for by buyers, who do not look for much lower prices, but at the same time they cannot see any advantage in making future contracts and are simply buying to fill immediate requirements. The minimum figures given below represent about what buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum figures the average selling prices f.o.b. at yards:

No. 1 railroad wrought, net ton.....	\$9.50 to \$10.25
Casting borings, net ton.....	4.50 to 5.00
Steel turnings, net ton.....	5.50 to 6.00
No. 1 cast scrap, net ton.....	9.00 to 9.75
Burnt scrap, net ton.....	6.25 to 6.75
Old iron axles, net ton.....	16.25 to 16.75
Bundled sheet scrap, gross ton.....	5.75 to 6.50
Old iron rails, gross ton.....	13.00 to 13.75
Relaying rails, 50 lb. and up, gross ton.....	20.75 to 21.50
Old car wheels, gross ton.....	9.50 to 10.25
Heavy melting steel scrap.....	9.25 to 10.00

### The German Iron Market.

BERLIN, October 27, 1911.

There is no check to the firm tendency of prices, and the works continue well employed in all lines of production. At the fortnightly trading of the Düsseldorf Exchange a week ago higher prices were noted for some forms of iron and steel. One of the sensations of this week, however, was the fact that unexpectedly low bids were handed in for public contracts on some 7700 tons of basic bars let out by the railroad authorities at Cologne. One firm of dealers offered to supply the bars at 92.70 to 95 marks, delivered at Diedenhofen (Lorraine), or at 100 marks at Oberhausen on the Rhine. Another firm of dealers also put in bids below 100 marks. The big manufacturers, however, did not bid lower than 102—105 marks. Krupp offered to supply heavy plates at 129.50 marks, this being the highest bid. The lowest was 117 marks, made by a dealer.

The Steel Works Union gave out its regular monthly market summary several days ago. It says that home consumers of half-rolled material are well supplied with orders, hence that the calls for material are brisk; also that rather large supplementary orders for the current quarter have been sent in. The foreign market keeps firm. The foreign demand for heavy rails continues quite good, and the union is well satisfied with the volume of orders and inquiries. Negotiations on further foreign orders for grooved rails have been begun. The business in rails for mines has latterly become more active; the calls for shipments on order have been more urgent this month than in the two previous months. The foreign demand for this class of rails has also improved somewhat. Business in structural forms remains good; specifications are coming in better than a year ago, and the foreign trade is calling for delivery at a satisfactory pace.

The current trade reports mention the fact that the demand for ores in the Siegerland district has slowed up somewhat, and supplies are accumulating at the mines. Nevertheless, it is expected that the Ore Association will raise prices by 0.75 or 1 mark for 1912 delivery. The market for foreign ores remains firm. It appears now that the Pig Iron Syndicate is holding back with sales for next year till about the end of the month, by which time it is hoped that certain arrangements with several big dealers shall have been completed.

The market for finished products is firm. Business in bars is very active, especially for the export trade; the mills are mostly supplied with orders for four to five months ahead, and some till about the end of March. The producers of iron bars, who are in a trade combination, are considering an advance of prices by 2 to 2.50 marks in view of the higher prices of pig iron. The present price is 133 marks for ordinary commercial shapes. Equal firmness is reported from the heavy plate trade, and some of the mills are already selling above the convention price. The organization itself is expected to adopt higher prices for 1911 delivery. Heavy plate mills continue to run under pressure, and there is no prospect that business will fall

off soon. In thin plates an increase in the volume of orders is reported, but prices are still unsatisfactory; some of the mills have work till the end of March. The foreign market has increased its demand for plates, but export prices are not wholly satisfactory. The Band Iron Association has given out its price for 1911 at an unchanged level of 127.50 marks; but the mills are troubled with the competition of several southwestern concerns, and the convention price is not maintained in all cases. The foreign market is also taking considerable amounts of band iron.

The news from the Belgian market remains good. Several days ago the telegraph reported an advance of basic bars for export by 1 shilling to 96—98s., and iron bars to 97—98s. The French market remains firm, and the scale of production is still expanding. This is particularly true of the Briey district. A press report indicates that not less than 40 new blast furnaces are in course of construction in France, Luxemburg, and German Lorraine, to run chiefly on Briey ores. They will have a total capacity of about 2,800,000 tons per annum and consume about 8,500,000 tons of ores. These furnaces are all to be completed within two or three years, and a considerable number within one year. When they are all in operation it is expected that the demand for Briey ores will be doubled; but it is doubted whether the mines can be opened up fast enough to meet the demand for ores.

### Buffalo

BUFFALO, N. Y., November 6, 1911.

**Pig Iron.**—The market is quiet with comparatively little new business placed in the week except for carload lots and small sized lots for immediate shipment. Shipments on contracts have been heavy and there has been a steady volume of requests for rush shipments by many of the larger melters on contracts placed some time ago. In some instances shipments on orders for forward deliveries are being anticipated, showing good current consumption. A considerable proportion of the new orders received for small lots of foundry grades are accompanied by requests for rush shipment, indicating that consumers' stocks in yards have been reduced to so low a point that immediate shipment is urgent. The same situation is also true as regards coke. It is estimated that a large proportion of the trade has not yet covered for early 1912 requirements. With consumption on the increase furnacemen are looking for a considerable acceleration in active demand before the close of the year, and it is stated by producers of foundry iron that furnaces now idle cannot afford to blow in until the market is at least a dollar a ton higher than at present. For current quarter and first quarter of next year we quote as follows, f.o.b., Buffalo:

No. 1 X foundry.....	\$13.75 to \$14.00
No. 2 X foundry.....	13.25 to 13.75
No. 2 plain.....	13.00 to 13.50
No. 3 foundry.....	13.00 to 13.25
Gray forge.....	13.00
Malleable.....	13.75 to 14.25
Basic.....	13.75 to 14.25
Charcoal.....	16.50 to 17.25

**Old Material.**—The tone of the market has improved somewhat and a better feeling is in evidence among dealers, who anticipate an increase in business in the near future, although only a small volume of orders is reported. The price schedule remains unchanged: We quote as follows, per gross ton f.o.b. Buffalo:

Heavy melting steel.....	\$12.50 to \$13.00
Low phosphorus steel.....	16.00 to 16.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 1 railroad and machinery cast scrap....	13.50 to 14.00
Old steel axles.....	18.50 to 19.00
Old iron axles.....	22.00 to 22.50
Old car wheels.....	13.00 to 13.50
Railroad malleable.....	12.75 to 13.00
Boiler plate.....	12.50 to 13.00
Locomotive grate bars.....	11.00 to 11.50
Pipe.....	9.25 to 9.50
Wrought iron and soft steel turnings.....	7.15 to 7.40
Clean cast borings.....	7.00 to 7.25

**Finished Iron and Steel.**—Specifications on contracts for bar products have been coming in quite freely during the week; but the volume of new orders has been rather less than a week ago. The continued rumors of lower quotations and unsettled conditions in prices have a tendency to hold back new work. Some agencies state that business is being refused in bar products at lower prices than 1.10c., Pittsburgh base, for desirable tonnage and 1.15c. for less than carload lots. The demand for plates and shapes has been light for the

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week with prices still ruling at 1.20c. The volume of Canadian export trade is also held somewhat in check by the price uncertainty, but a 1400-ton order for reinforcing concrete bars to be used for construction work on the Ontario elevator at Toronto is noted. Most of the tin plate users in this market have covered their requirements for the first six months of next year. A number of the principal sheet buyers have also tried to cover for their first half requirements; but some of the larger mills are not inclined to entertain contracts for an extended period into next year at to-day's ruling prices. It is stated, however, some contracts have been closed on the present basis of prices. In structural lines no improvement in demand is noted over last week, but a moderate amount of new business is developing and all of the fabricating shops in the Buffalo district are well filled with orders. The Buffalo Structural Steel Company has been awarded the contract for fabrication and erection of the steel for the Gould Building on Washington street, Buffalo, 200 tons.

### St. Louis

St. Louis, Mo., November 6, 1911.

Conditions in this market continue to have much the same aspect as reported a week ago, with this exception, that a little break in the clouds is seen through the tendency of the transportation interests to purchase equipment. The American Car & Foundry Company's plant at Madison started up to-day, employing about 2500 hands, the result of the placing of orders for 6000 cars, 2000 each by the Frisco, New York Central and Missouri Pacific. The material purchases, however, are expected to be made in Chicago.

**Pig Iron.**—Purchases of pig iron have been by the carload, as usual. The takings on contracts are continuing good and practically no consumers are behind on their specifications. The inquiries for future delivery are few and usually small. The inquiry for 1000 tons of car wheel iron, which was by the American Car & Foundry Company, has not been closed. Prices show no change, but there seems no pressure of moment to drive them lower.

**Coke.**—Specifications on contracts are about the only evidence of life in this market and the quantity going forward is up to the contract requirements, but not in excess thereof. There are no inquiries in the market of consequence, and no transactions other than minor deals of immediate shipment character are reported.

**Old Material.**—The Missouri Pacific lists and that of the Frisco which closed last week showed prices below those of the previous month. The new lists which came out during the week were the Vandalia, 300 tons; Wabash, 1400 tons; Mobile & Ohio, 400 tons, and the Southern, 800 tons. All these are expected to show the same conditions as the lists of last week. There has been a considerable decrease in the inquiry for relaying rails and such orders as are being considered are likely to go at some concession. Dealers' prices, f.o.b. St. Louis, per gross ton, are as follows:

Old iron rails.....	\$12.00 to \$12.50
Old steel rails, rerolling.....	11.50 to 12.00
Old steel rails, less than 3 ft.....	10.00 to 10.50
Relaying rails, standard section, subject to inspection.....	22.50 to 23.00
Old car wheels.....	11.50 to 12.00
Heavy melting steel scrap.....	10.00 to 10.50
Frogs, switches and guards cut apart.....	10.00 to 10.50

The following prices are per net ton:

Iron fish plates.....	\$10.00 to \$10.50
Iron car axles.....	17.00 to 17.50
Steel car axles.....	15.00 to 15.50
No. 1 railroad wrought.....	10.25 to 10.75
No. 2 railroad wrought.....	9.25 to 9.75
Railroad springs.....	9.25 to 9.75
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	7.00 to 7.50
Mixed borings.....	5.00 to 5.50
No. 1 busheling.....	8.50 to 9.00
No. 1 boilers cut to sheets and rings.....	7.00 to 7.50
No. 1 cast scrap.....	8.50 to 9.00
Stove plate and light cast scrap.....	7.00 to 7.50
Railroad malleable.....	7.50 to 8.00
Agricultural malleable.....	6.50 to 7.00
Pipes and flues.....	7.50 to 8.00
Railroad sheet and tank scrap.....	7.00 to 7.50
Railroad grate bars.....	6.50 to 7.00
Machine shop turnings.....	6.50 to 7.00

**Finished Iron and Steel.**—The tonnage aggregate continues fair, but no new business of any size is going through. In structural material the orders are for immediate use. The prevailing price is 1.15c., Pittsburgh. Bars continue in fair demand at 1.10c. Plates show no movement of interest, though some orders are anticipated

as a result of orders for cars by Southwestern railroads. In steel rails, standard section, two inter-urban lines are in the market, one from Iowa and the other from Kansas, the total requirements being about 3000 tons. Track fastenings are in fair request. Light rails show an improvement in activity in the coal mining districts, but the lumber roads are doing absolutely nothing.

### Boston

BOSTON, MASS., November 7, 1911.

**Old Material.**—The monotonous dullness of the scrap market continues unbroken with no changes in prices. Few transactions are reported. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50 cents a ton more than dealers' prices.

Heavy melting steel.....	\$9.50 to \$10.00
Low phosphorus steel.....	11.45 to 11.95
Old steel axles.....	14.00 to 14.50
Old iron axles.....	17.00 to 18.00
Mixed shafting.....	12.75 to 13.25
No. 1 wrought and soft steel.....	10.50 to 10.75
Wrought iron pipe.....	8.75 to 9.00
Skeleton (bundled).....	7.00 to 7.50
Cotton ties.....	7.00 to 7.50
No. 2 light.....	4.50 to 5.00
Wrought turnings.....	5.00 to 5.50
Cast borings.....	4.50 to 5.00
Machinery, cast.....	12.50 to 13.00
Malleable.....	9.25 to 9.75
Grate bars.....	6.00 to 6.50
Stove plate.....	8.00 to 8.50

The Perry-Buxton-Doane Company has been incorporated under the laws of Massachusetts with a capital stock of \$850,000. Wm. H. Perry is president; A. L. D. Buxton, vice-president; George B. Doane, treasurer, and W. Vernon Phillips, secretary. On January 1 the company will take over and continue the scrap iron and metal business of the Wm. H. Perry Company, Providence, R. I.; E. Buxton & Son Company, Worcester, Mass.; Buxton-Doane Company, Boston, Mass., and F. R. Phillips & Sons Company, Philadelphia, Pa. The main office will be located in Boston, with a branch office in the Pennsylvania Building, Philadelphia, and yards and offices in the several districts as now established. This arrangement will affect only the scrap iron business of the companies named, the other branches of their individual business being transacted as heretofore.

### Cleveland

CLEVELAND, OHIO, November 6, 1911.

**Iron Ore.**—Ore shipments by water from the opening of navigation until November 1 were 29,607,102 tons. This is a decrease of 10,371,206 tons as compared with last year. October shipments were 4,769,065 tons, a falling off of 107,476 tons as compared with the same movement a year ago. Ore firms are now cleaning up on their shipments and the November movement will be very light, probably less than 2,000,000 tons, so that it is doubtful if the total lake movement for the season will reach 32,000,000 tons. Estimates made early in the season were that the movement would be 30,000,000 to 35,000,000 tons. An important factor in the general situation is the railroad rate readjustment question. Following the lowering of carrying charges 20 cents a ton on ore from the Mesaba and Vermillion ranges to Duluth, reports are being circulated that the carrying charges on ore from Lake Erie ports to the Valley will be reduced, and that a reduction will also be made in the freight rate on coke from Pennsylvania ovens to Valley points. The ore rate from Lake Erie ports to the Valley at present is 56 cents a ton for direct shipments and 64 cents a ton for dock shipments. The corresponding rates from Lake Erie ports to Pittsburgh are 96 cents and \$1.04. We quote prices as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—The lower prices that have been quoted on foundry grades during the past two weeks have brought no increase in the demand. While some iron

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is being sold for delivery over the remainder of the year and for the first quarter, buyers generally are holding off, those needing iron placing orders only for their immediate requirements. They feel that prices may go still lower and that there is little possibility of their being higher for delivery during the early part of next year. We note the sale of two lots of 500 tons each of No. 2 foundry for delivery in Cleveland during the remainder of the year and the first quarter. A local manufacturer is in the market for 1000 tons of No. 1 foundry for early delivery. For delivery over the remainder of the year and through the first quarter No. 2 foundry is quoted at \$13, Cleveland furnace. While this price has been shaded for outside shipment it is claimed that it is the minimum for local delivery. For the same delivery Valley furnaces quote No. 2 foundry at \$13 to \$13.25, at furnace. Shipments continue fairly good. Foundries generally are carrying low stocks and are ordering in small lots on contracts as needed. For Cleveland delivery we quote as follows for prompt shipment and for the first quarter:

Bessemer .....	\$15.15
Basic .....	13.40
Northern foundry, No. 2 .....	13.25
Gray forge .....	12.75
Southern foundry No. 2 .....	\$14.35 to 14.60
Jackson County silvery, 8 per cent. silicon .....	17.05

**Coke.**—There is no inquiry for furnace grades but two or three interests are expected to be in the market for contracts on a sliding scale basis before the end of the year. There is little activity in foundry grades, sales being confined to small lots. We quote standard Connellsville furnace coke at \$1.50 to \$1.55 per net ton, at oven, for prompt shipment, and \$1.60 for the remainder of the year. Connellsville 72-hr. foundry coke is held at \$1.90 to \$2.15 for prompt shipment and \$2.15 to \$2.35 for contract.

**Old Material.**—The market is practically lifeless. Heavy steel scrap is being sold in small lots as low as \$10.75 to local consumers. Other grades are very weak but there is scarcely enough business going to clearly define prices. No round tonnages of scrap are being offered at present quotations and mills are not actively in the market, limiting their buying mostly to car lots that dealers want to dispose of quickly at low prices. The Michigan Central Railroad closed November 7 on about its usual list. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling .....	\$12.25 to \$12.75
Old iron rails .....	14.00 to 14.50
Steel car axles .....	17.00 to 17.50
Heavy melting steel .....	10.50 to 11.00
Old car wheels .....	11.50 to 12.00
Relaying rails, 50 lb. and over .....	22.50 to 23.50
Agricultural malleable .....	10.50 to 11.00
Railroad malleable .....	11.00 to 11.25
Light bundled sheet scrap .....	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles .....	\$18.50 to \$19.00
Cast borings .....	6.00 to 6.25
Iron and steel turnings and drillings .....	6.50 to 6.75
Steel axle turnings .....	7.25 to 7.75
No. 1 busheling .....	9.00 to 9.50
No. 1 railroad wrought .....	11.00 to 11.25
No. 1 cast .....	11.00 to 11.50
Stove plate .....	9.00 to 9.25
Bundled tin scrap .....	11.00 to 11.50

**Finished Iron and Steel.**—Four lake boats ordered from the American Shipbuilding Company in the past ten days will require about 8000 tons of plates and structural material. The steel will be furnished by the Carnegie Steel Company. Generally the situation in regard to finished lines shows very little change either in regard to the demand or prices. Mill agencies are getting a good volume of orders for small lots, consumers as a rule buying only for their immediate requirements. There are still reports of steel bars being sold at 1.05c., Pittsburgh, but this price is not made by all of the mills and is for only very desirable orders. Steel bars are generally quoted at 1.10c. to 1.15c. Contracts for delivery through the first quarter can be had at the latter price. Not much business, however, in any line is being taken for delivery after the end of the year, neither the sellers nor buyers being eager to make contracts for that far ahead. The demand for structural material is moderate. No new building work requiring large lots is coming out and local fabricating shops have but a limited amount of work on hand. We quote structural material at 1.20c., Pittsburgh, but this price can probably be shaded on a desirable order. Plate mills are getting a good volume of small lot orders. The ruling quotations are from 1.15c. to 1.20c. Boiler steel, however, appears fairly firm at the latter

price. There is a fair demand for sheets. Sheet prices are steady, 1.85c. for No. 28 black and 2.85c. for No. 28 galvanized being the minimum quotations for car lots. The demand for iron bars is not active but the local mills are getting enough orders to keep running the most of the time. The price is firm at 1.20c., Cleveland.

### New York

NEW YORK, November 6, 1911.

**Pig Iron.**—The shrinkage in new business and in inquiry has been pronounced in the past week. A number of good inquiries were before the trade two weeks ago, but nearly all have been withdrawn. Buyers have been commenting on recent developments in the industry which in their opinion tend toward lower prices, though it is admitted that the reductions in cost due to lower ore freights and to a downward tendency in ore royalties will not become operative for some time. The result is a general waiting and meantime a weaker market. The principal inquiry before local sellers is one for 5000 tons of high phosphorus iron for a Massachusetts foundry, action on which is not expected until the latter part of the month. While the pipe foundries bought freely last month there is still some inquiry for lower grade irons from that quarter. One Eastern Pennsylvania pipe foundry is in the market for 3000 tons for February delivery. The production of pig iron in the East remains about the same. In Virginia one furnace has been added to the active list in the past month. Virginia furnaces are still quoting \$12.25 at furnace for No. 2 X foundry iron. Some of them have been asking \$12.75 for shipment over the first half of 1912, but buyers have not been willing to pay this price. Buffalo iron has sold at \$13 for No. 2 X, and there is just now some pretty active competition between Buffalo furnaces and Canadian furnaces for business that is about to be placed by Canadian foundries. Quotations are as follows for Northern iron at tidewater: No. 1 foundry, \$15.25 to \$15.50; No. 2 X, \$14.75 to \$15.25; No. 2 plain, \$14.50 to \$14.75. For Southern iron we quote \$15 to \$15.25 for No. 1 foundry and \$14.50 to \$14.75 for No. 2 foundry.

**Finished Iron and Steel.**—The New York finished iron and steel market has not yet responded to the activities in iron and steel purchases in other centers credited to the railroads nor has it met, or had to meet, low prices apparently obtaining elsewhere. Business continues dull, but there seems to be a firmer undertone in that a fair run of business continues at fair prices and in that a widespread notion exists that the conditions will at least be maintained, no sudden rise or sensational movement being looked for. Greater activity is reported in bar iron but other lines, including the structural, are disappointing in the absence of new inquiry. The most interesting development is the award of the principal portions of the bridge structure of the New York Connecting Railroad, 36,000 tons, given to the American Bridge Company, as announced at length elsewhere in this issue. The fact that the bids were submitted some months ago, that the project is one of some years standing and that the work is let at this time is taken to mean that those in charge regard the market as substantially at bottom. Other structural work contracted for includes: Bridge for the Pennsylvania Railroad at Williamsport, Pa., 2400 tons, to the Pennsylvania Steel Company; bridge for the city of Passaic, N. J., 1000 tons, to Snare & Triest; building for the Otis Elevator Company, New York, 1500 tons, to the American Bridge Company, which is also to erect a 200-ton structure for the Harrison, N. J., station of the Pennsylvania Railroad; structural work for the New York Central Railroad terminal, 700 tons, to the Jones & Laughlin Steel Company, and the structure for an apartment house at 116th street and Broadway, New York, 700 tons, to Milliken Brothers. Estimates are being made for the Emmett Building, Madison avenue Twenty-ninth street, New York, involving 600 or 700 tons. In addition to the 130,000 tons of structural work still pending in lots of 400 tons and larger, mostly above 1000 tons, may be added 800 tons for Queens Court Building, New York City. As regards prices, it is proper to quote for New York delivery what prices are admittedly made at the mills plus the freight charge, but a very large part of the business placed in this territory appears not to come under the designation of desirable and a higher scale

## THE IRON AND METAL MARKETS

obtains as recorded in this column in recent issues. Plates are again being differentiated from structural shapes, lying generally in price between bars and beams. Quotations are: Steel bars, 1.26c. to 1.31c.; plates and plain structural material, 1.31c. to 1.41c.; bar iron, 1.20c. to 1.30c., all New York. Plain material and plates from store, New York, 1.65c. to 1.75c.

**Cast Iron Pipe.**—The most important business in sight is the expected purchase of 12,000 tons of 40-in. water pipe by Quebec, Canada. The date for opening the proposals has not yet been announced. The demand for small lots continues moderately active. Carload lots of 6 in. are still quoted at \$21 to \$22 per net ton, tidewater.

**Old Material.**—The market is persistently quiet. No transactions involving a considerable quantity are reported. Consumers have so far made no change in the long continued policy of buying in small quantities for immediate requirements. Dealers' prices per gross ton, New York and vicinity, are continued as follows:

Old girder and T rails for melting.....	\$9.25 to \$9.50
Heavy melting steel scrap.....	9.25 to 9.50
Relaying rails.....	20.00 to 21.00
Rerolling rails (nominal).....	11.25 to 11.75
Old iron car axles.....	19.00 to 19.50
Old steel car axles.....	15.00 to 15.50
No. 1 railroad wrought.....	11.00 to 11.50
Wrought iron track scrap.....	10.50 to 11.00
No. 1 yard wrought, long.....	10.25 to 10.75
No. 1 yard wrought, short.....	9.25 to 9.75
Light iron.....	3.75 to 4.25
Cast borings, clean.....	5.50 to 6.00
Mixed borings and turnings.....	4.75 to 5.25
Wrought turnings.....	5.75 to 6.25
Wrought pipe.....	8.50 to 9.00
Old car wheels (nominal).....	9.50 to 10.00
No. 1 heavy cast, broken up.....	10.00 to 10.50
Stove plate.....	7.75 to 8.25
Locomotive grate bars.....	7.75 to 8.25
Malleable cast.....	9.75 to 10.25

### Metal Market

NEW YORK, November 8, 1911.

#### The Week's Prices

Copper, New York.		Tin.		Lead.		Spelter.	
Nov.	Lake.	Electro-lytic.	New York.	New York.	St. Louis.	New York.	St. Louis.
1.....	12.50	12.37½	41.15	4.25	4.15	6.35	6.20
2.....	12.50	12.37½	41.00	4.25	4.15	6.35	6.20
3.....	12.50	12.37½	...	4.25	4.15	6.35	6.20
4.....	12.50	12.37½	41.70	4.25	4.15	6.35	6.20
5.....	12.50	12.37½	42.00	4.25	4.15	6.35	6.20

Tin is advancing in price but little actual business is being done. Copper is dull and quiet. Both lead and spelter are steady and stocks are scarce for early delivery.

**Copper.**—The copper market to-day is dull and quiet with no special movement on either side. The report of the Copper Producers' Association, which will be issued today, is expected to show a material increase in stocks over last month's report. Consumers, however, do not believe that this will have much effect on the general market. There has been no business of any size reported, and the general quotation for Lake copper is 12.50c., but desirable business could no doubt be placed at a few points lower. Electrolytic is quoted at 12.37½c. and is a little firmer than Lake. The exports of copper so far this month are reported as 6699 tons. The London market is steady and spot was selling this morning at £56 1s. 3d. and futures at £56 15s.

**Pig Tin.**—Pig tin has sold during the week at a wide range of prices, in sympathy no doubt with the manipulations in the London market and the intervening holiday. Sales were made in New York last Thursday as low as 41.10c. for spot and on Friday the market was very active on bids for future business with prices ranging from 41.05c. to 41.20c. and spot at 41c. Monday the market advanced sharply to 41.70c. The quotation for spot tin today is 42c., but this price is purely nominal, as there is very little business in sight at this figure. In the London market this morning spot tin was sold for £190 15s. and futures at £186. The arrivals of tin so far this month were 192 tons and there are 1950 tons reported afloat.

**Tin Plates.**—The price of tin plates at Swansea, Wales, is reported at 13s. 3d. The domestic demand is quiet and the quotation is nominal at \$3.64 for 100 lb. coke plates.

**Lead.**—The market is steady today in New York and in St. Louis. Early deliveries are very scarce. The prices are quoted today at 4.15c. St. Louis, and 4.25c. New York, but there is every reason to believe

that concessions of at least two points are being made on these figures.

**Spelter.**—The recent rumors of manipulations on the part of some of the leading producers and sellers were apparently well founded but stocks are extremely scarce for early delivery. The market for spelter is quiet and consumers are not attracted by the present quotations of 6.20c., St. Louis, and 6.35c., New York.

**Antimony.**—The market is very quiet and the quotations of last week are maintained with Hallett's selling at 7.70c. and Cookson's 8c. Chinese and Hungarian brands can be had at from 6.75c. up.

**Old Metals.**—Business is of a hand-to-mouth character. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible.....	11.75 to 12.00
Copper, heavy and wire.....	11.37½ to 11.50
Copper, light and bottoms.....	10.50 to 10.75
Brass, heavy.....	8.00 to 8.25
Brass, light.....	6.50 to 6.75
Heavy machine composition.....	10.25 to 10.50
Clean brass turnings.....	7.75 to 8.00
Composition turnings.....	8.50 to 9.00
Lead, heavy.....	4.15
Lead, tea.....	3.90
Zinc, scrap.....	4.50

#### Chicago

NOVEMBER 6.—While the current market activity in metals has shown no great increase in volume, a stronger tone is apparent. This is noteworthy as regards copper, on which higher prices have been considered imminent for some time. Tin prices have fluctuated considerably and show a net gain as compared with last week. The high value placed on spelter continues to hold. Other prices are maintained without change. We quote at Chicago: Casting copper, 12.37½c. to 12.50c.; Lake, 12.62½c. to 12.75c., in carloads, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, carloads, 42.50c.; small lots, 45.50c.; lead, desilverized, 4.25c. to 4.30c., for 50-ton lots; corroding, 4.50c. to 4.55c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.30c. to 6.35c.; Cookson's antimony, 9.25c., and other grades, 8.25c. to 8.75c., in small lots; sheet zinc is \$8, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 10.75c.; copper bottoms, 9.62½c.; copper clips, 10.25c.; red brass, 9.75c.; yellow brass, 7.75c.; lead pipe, 4c.; zinc, 4.25c.; pewter, No. 1, 26c.; tinfoil, 32c.; block tin pipe, 36c.

#### St. Louis

NOVEMBER 6.—Metals continue in reasonably good demand. Both lead and spelter are stronger than at last report, lead being quotable at 4.15c. to 4.175c. and spelter at 6.25c. to 6.275c. Tin is held at 41.40c. Lake copper is unchanged at 12.85c., while electrolytic is a little off at 12.725c. Cookson's antimony continues at 8.35c. In the Joplin market the past week the top price for zinc blende was \$51 on a contract basis of \$46.80. This is better by almost \$2 than the best price reported in the open market, where the prices ranged from \$45 down to \$40. Calamine continues very firm, partly due to decrease in production. This ore comes from shallow workings which are affected by the cold weather. On a 40 per cent. basis it brought \$23 to \$25 per ton, with \$32 being paid for choice lots. Lead ore continues unchanged at \$55 to \$57 per ton and the value of the sales during the week was the largest of the year's business. We quote miscellaneous scrap as follows: Light brass, 4c.; heavy brass and light copper, 8c.; heavy copper and copper wire, 9c.; zinc, 3c.; lead, 3.25c.; pewter, 29c.; tinfoil, 29c.; tea lead, 3c.

The question of freight rates on coke hauled into St. Louis was considered in a hearing held in St. Louis last week by Special Examiner Smith, representing the Interstate Commerce Commission. The case was that of the St. Louis Blast Furnace Company, which is seeking \$30,000 damages from different railroads on the allegation that there is discrimination against St. Louis in the coke rates as compared with coal, thus materially affecting the furnace company adversely. The testimony brought out was with relation to the shipping of coke from the West Virginia fields. The complaint is that a dual rate exists favoring Chicago, Milwaukee, Toledo, Detroit, Joliet and other cities as against St. Louis on blast furnace and foundry cokes. Railroad men were heard chiefly and admitted the statements of fact as to rates, but presented their reasons for the condition complained against.

## Iron and Industrial Stocks

NEW YORK, November 8, 1911.

The stock market is acting like an individual who has been attacked by so many ailments that he finally becomes hardened to pain and pursues his ordinary vocation as though undisturbed by his afflictions. Notwithstanding the suits against corporations and intimations that others are coming, the values of stocks steadily appreciated the past week. Some quite notable advances were made. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com....	3 - 3½	Pittsburgh St., pref. 100	-101
Allis-Chalm., pref....	10½-11	Pressed Steel, com....	30¾-31¾
Beth. Steel, com....	28½-30¼	Pressed Steel, pref....	96
Beth. Steel, pref....	54 - 58¾	Railway Spring, com. 27½	-29¾
Can., com.....	10 - 11¼	Railway Spring, pref....	100
Can., pref.....	86 - 88¾	Republic, com.....	19¾-21½
Car & Fdry., com....	47¾-50¾	Republic, pref.....	78¾-80
Car & Fdry., pref....	114½-116	Sloss, com.....	41 - 42
Steel Foundries....	30 - 32¼	Pipe, com.....	13¾
Colorado Fuel.....	26 - 27½	Pipe, pref.....	42½
General Electric....	150½-154	U. S. Steel, com....	53¾-60¾
Gr. N. Ore Cert....	41½-42½	U. S. Steel, pref....	106½-110
Int. Harv., com....	106¼-108½	Westinghouse Elec....	63¾-65¾
Int. Harv., pref....	120½-122¾	Chic. Pneu. Tool....	45¾-46¾
Int. Pump, com....	25 - 30	Cambria Steel.....	42¾-43¾
Int. Pump, pref....	80 - 82	Lake Sup. Corp....	27¾-28¾
Lackawanna Steel....	30	Warwick.....	10
Locomotive, com....	33 - 35¾	Crucible Steel, com. 10	-11
Locomotive, pref....	103 -103½	Crucible Steel, pref. 75¾	-76½
Nat. En. & St., pref....	94	Harb. Wk. Ref., pref. 96¼	-96½

### Dividends Declared

The American Radiator Company, regular quarterly, 1¾ per cent. on the preferred stock, payable November 15, and 2 per cent. on the common stock, payable December 30.

The Pittsburgh Valve, Foundry & Construction Company, quarterly, 1½ per cent. on the common and preferred stock.

The Cleveland Cliffs Iron Company, quarterly, 2½ per cent., comparing with 3 per cent. and 2 per cent. extra quarterly, the reported rate for some years.

The Pittsburgh Steel Company, quarterly, 1¾ per cent. on the preferred stock, payable December 1.

## American Society for Testing Materials

The last annual meeting of the American Society for Testing Materials adopted a resolution, subject to confirmation by letter ballot, providing that the next annual meeting be held in June, 1912, and be limited to the annual reports of standing technical committees and to administrative business. This action was taken in view of the sixth congress of the International Association for Testing Materials which will be held in this country in September, 1912. The Executive Committee of the society at a recent meeting decided that the holding of the next annual meeting as late as June of next year might affect the success of the International Congress and that it would be best to have the annual meeting prior to April 1, 1912. This amendment to the resolution passed at Atlantic City is now being submitted to the membership. It is probable, in case of its adoption, that the meeting for the hearing of committee reports and for other business will be held in New York City.

The Executive Committee announces that the vacancy in its membership occasioned by the death of James Christie was followed by the election of A. A. Stevenson, Standard Steel Company, Burnham, Pa., for the unexpired term. It was decided to enlarge the Committee on Publications. It is expected that a plan will be devised for a formal examination of the papers to be presented at the annual meetings and for putting such papers in type in advance of meetings. The Executive Committee decided to subscribe \$5,000 to the International Association for Testing Materials so as to secure for every full member of the society a complete report of the proceedings of the 1912 congress of the International Association, a copy for every junior member on payment of \$2.50, and the participation in the congress of every member of the American Society not holding membership in the International Association, on payment of the prescribed fee.

The three Pioneer furnaces of the Republic Iron & Steel Company at Thomas, Ala., exceeded their best previous month's record in October by 31 tons, producing a total of 24,694 tons. One day's product was 901 tons, which was a new 24-hour record.

## The American Steel Foundries Earnings

The American Steel Foundries and its subsidiaries report for the 14 months ended September 30, 1911, as follows:

Earnings from operation of plants and net income of subsidiary companies (after deducting manufacturing, selling, administrative, head and district office expenses and before deducting depreciation).....	\$660,337
Other income:	
Interest, discount and exchange.....	\$43,506
Income from investments and loans.....	447
Sinking fund profits.....	6,123
Miscellaneous .....	5,840
	55,917
Total income.....	\$716,254
Deduct:	
Interest on borrowed money.....	\$287
Interest on debentures.....	160,384
Interest on bonds outstanding.....	202,625
Interest on bonds in sinking fund.....	68,390
Bond sinking fund installment and profit.....	128,623
Depreciation of buildings, plant and equipment (all properties) .....	273,075
	833,306
Net loss.....	\$117,132

Although this statement is anything but encouraging, an official of the company says that during October there was a marked betterment in orders and inquiries so that the outlook is a little brighter. Operations, however, continue at about 40 per cent. of capacity, the improvement not yet having affected plant activity. The odd period covered by the statement is the result of the change in the fiscal year from July 31 to December 31.

## Canadian Iron and Steel Output

The Iron Trade Journal, Toronto, Canada, has published the statistics of the production of pig iron, steel ingots and steel rails in Canada in the first half of 1911. The figures show that the output of pig iron by the Canadian furnaces for the six months ended June 30 increased 16 per cent. over the same period of 1910. The increase in the production of steel ingots was not so large, being about 10½ per cent. The following table gives the production of pig iron, steel ingots and steel rails in the first half of 1911 and 1910 respectively, in gross tons:

	1911	1910
Pig iron.....	400,170	344,783
Steel ingots.....	374,793	338,966
Steel rails.....	161,635	174,592

It is significant that in spite of the keen competition from the United States the production of iron and steel in Canada in the first half of the year should have been so gratifying as far as tonnage is concerned.

**Federal Control of Large Business.**—Commissioner Lane of the Interstate Commerce Commission favors the creation of a national corporation commission with power of control and regulation of large business enterprises and corporations similar in character to that of the Interstate Commerce Commission. He says there should go with this a right on the part of small enterprises to agree together as to a minimum price to protect themselves against a cutthroat competition that would be ruinous. Commissioner Lane believes the Government should have power to decide where a new railroad should run. He thinks "it is only consistent with the theory upon which we are now proceeding that we should protect the railroad that is in existence against competition that may be ruinous to it; that we should guarantee in a sense a certain territory to a railroad whose rates and services are under control and regulation by the state."

Since the building of the new plant of the Anderson Forge & Machine Company, Detroit, Mich., the active organization has been entirely changed, with W. T. Howell as general manager. Mr. Howell, after 30 years in the drop forging business, went from the Bethlehem Steel Company three years ago to assume the factory management of the Anderson Forge & Machine Company. Since his advent the Detroit company has adopted a new policy and is now specializing in the production of alloy steel, brass and bronze forgings. Particular attention is given to heat treatment, this department being well equipped with the most recent appliances.

The Allegheny Ore & Iron Company on November 1 took over the Buena Vista furnace. The lease to the Oriskany Ore & Iron Company expired on that date.

## Revolving Grate Gas Producer

### Experience with It at German Works

K. Munzel, of the Peine Steel Works, Peine, North Germany, has recently given\* the results of his long practical experience in the starting and operating of the Küppers gas producer. This producer was illustrated and described in *The Iron Age* of June 22, 1911, page 1534. In starting a revolving grate gas producer, the shaft is first filled with coal ash and clinker of average size to about 12 in. above the head of the grate. On this is laid a layer of dry wood from about 12 to 20 in. thick. On this is placed lump coal in a layer from about 20 to 31 in. deep.

For even and quick combustion it is a good plan to throw two or three buckets of crude oil or thin liquid tar over the whole. The fire is best started by balls of used cotton waste, sometimes soaked in kerosene, thrown in various directions through the charging hopper. When the wood and coal are burning well from 650 to 1100 lb. of lump coal are charged. When this is kindled only coke of medium size is charged to prevent unnecessary smoke and caking of the charge. If the brick work of the producer was originally well air dried, then a weak blast can be used, and with continual charging a hight of about 40 in. is reached in from eight to ten hours. The producer is then ready, and if it is to be put in use the revolving of the grate and shaft is begun. The automatic ash shovel will not be needed for several hours.

For successful running, the following fundamental law must be observed, which applies to all producers: Uniform participation of the whole section of the producer in gasification. This is brought about when the contents of the producer are uniformly loosened, which is made known by the upper surface of the charge showing an even dark red color. The more the operation follows this law, the better is the quality of the gas and the greater is the amount of coal gasified.

If the upper surface shows parts that are yellow or white, and other parts that are very dark red or almost black, this is evidence of bad working. In the dark patches the coal is more or less caked together, and this "green" coal offers so much resistance to the ascending gases that there is defective gasification or sometimes none. The blast, that seeks the easiest path, consequently goes through the looser portions of the charge with greater velocity, because the "green" patches reduce the cross section of the producer. This brings about defective reduction of the carbon dioxide made in the lower part of the producer and gives gas of lower quality.

Several factors must be considered, in a revolving grate producer, in order to obey the fundamental law, and avoid the practice outlined above.

#### 1. Hight and Kind of Ash

Experience has shown that the best results are obtained if the ash reaches at least to the top of the revolving grate. This prevents injury to the grate and also prevents any unburned fuel passing from the producer. The hight of the ash can be found out best by sticking several pokers into the column of charge, and leaving them there for two or three minutes. When withdrawn they show by the color how deep the fuel bed is. Very often it is found that the ash is higher around the walls than near the grate. This is mistakenly said to be due to a more thorough loosening of the ash near the grate and a pressing of the ash toward the sides.

If the difference in hight is considerable, it has an important influence on the quality of the gas, because the reduction zone near the walls is too thin. To help this condition, the grate is stopped and the ashes in the ash pit removed by hand. The ash near the walls is then knocked down from above with pokers until the hight is about uniform.

At Peine a special attachment to the revolving grate is used, which loosens the ash near the walls and brings about automatically a constant hight of ash. The ash is held at a fixed level in the producer by arranging the right number of revolutions and by proper placing of the automatic ash remover, depending on the ash of the fuel used. Steam is used with the air that is blown into the producer, to prevent too much clinkering. Less is needed than with the old style producer, the proper amount in each case

depending on the fuel. In any case it is advantageous to use steam at high pressure, not lower than 60 lb. per sq. in., for the low pressure steam is mostly condensed in the lower zone of ash and is without influence.

#### 2. Hight of the Charge

The greatest hight of charge possible is used in every producer in order to give as much carbon monoxide, and as little carbon dioxide as possible. The fuel used, however, limits the hight according to its size and caking properties. In many cases the fuel available does not possess the desirable properties to any large degree, and the producer must be able to make good gas from unsuitable fuel. The choice of the best depth of the fuel depends, before anything else, on the law mentioned previously. Figures are given showing suitable depths of charge for various fuels. Thus with a Westphalian coal, that is more or less strongly caking, a fuel bed of about 20 in. gives the best results. With English or Upper Silesian coals, which do not cake so readily, the depth can be increased from about 31 to 39 in. without danger of "green" coal. With brown coal briquettes, that show no caking and have just the right size, the depth can be increased to about 80 in. in the newest type of Küppers oven.

#### 3. The Poker Work

Notwithstanding the advances brought about by the revolving grate, the total avoidance of the help of hand poking is not possible. The amount of work necessary, however, is greatly reduced, and is restricted to the upper layer of the freshly charged coal. The clever construction of the revolving grate brings about such a loosening of the whole charge that, notwithstanding its hight, there is no great resistance to the ascending gases.

#### 4. The Charging Arrangement

The workman can be greatly helped by a suitable charging device. It should be so constructed that the coal can be charged either around the edge of the producer or in the middle. Then the fresh coal can be charged almost at the place where the color is brightest, and the ascending gas stream has, therefore, the least resistance to overcome. For a producer of from 9 ft. 4 in. to 9 ft. 10 in. diameter, a charging bell of 3 ft. 3 in. is necessary. Only with this size can the charge be delivered with certainty at the edge, especially when working with a low fuel bed. If the opening in the roof of the producer is made of 3 ft. 11 in. diameter, and the position of the bell when closed raised about 6 in. above the curve of the roof, there will then exist a ring shaped space of suitable size around the bell.

If it is desired to place the charge in the middle, then the bell is only partly lowered. The coal will strike against the brick work and be deflected to the middle. If the bell is opened completely and quickly, the charge will fall around the edge of the producer. Through proper raising and lowering of the bell the whole section can be covered.

The article closes with a reference to the importance of proper poker holes and covers and a prevailing low pressure in that part of the producer above the charge.

G. B. W.

## Trade Publications

**Sheet Metal Flumes.**—The Hess Flume Company, 635 First National Bank Building, Denver, Colo. Pamphlet. Calls attention to the line of flumes for irrigation, power, mining, ditch lining, intakes, outlets and substructures which is made in all sizes and capacities with interlocking water-tight joints without solder or rivets of Tongan metal. The uses of the flumes and the advantages of this metal for their construction are touched upon followed by a description showing the various kinds of the flumes. A specification table for carrier beams, rods, etc., and a velocity and discharge table for this flume complete the pamphlet.

**Fans.**—B. F. Sturtevant Company, Hyde Park, Mass. Mailing card. Calls attention to the Monogram fan designed for drying textiles and food products; conveying cotton, wool and other materials; blowing chips and dust from machinery, furnishing blast for forges and furnaces, and cooling materials, motors and workmen. These fans are built to meet all conditions and in a number of sizes, ranging in capacities from 75 to 1,000,000 cu. ft. per minute.

**Gasoline Motors.**—The Roberts Motor Company, Sandusky, Ohio. Pamphlet. Calls attention to a line of motors for aeroplanes which weigh about 3.4 lb. per horsepower. The construction of these motors is described at length and the text is supplemented by numerous half-tone engravings.

\*Stahl und Eisen, June 22, 1911.

## Personal

Adrian H. Lazare, for the past two years advertising representative of *The Iron Age* in the Central West, with headquarters at Cleveland, Ohio, has resigned for the purpose of engaging in other business. He has severed the connection voluntarily, and has the best wishes of his former associates for his success in his new field of endeavor.

The Secretary of the Interior announces the appointment of Waldemar Lindgren as chief geologist of the United States Geological Survey. Mr. Lindgren joined the Geological Survey as assistant geologist in 1884, since which time he has been continuously connected with the organization. Director George Otis Smith of the survey, states that Mr. Lindgren's record as a working geologist is best indicated by the fact that some 50 reports of which he is author are included in the list of publications of the survey. In addition to his survey publications he has contributed not less than three score articles to the various technical and scientific journals. He is a trained mining engineer, having received his degree at the Freiberg School of Mines.

Frank L. Session has been appointed superintendent of the Standard Welding Company, Cleveland, Ohio. He is a graduate of Worcester Polytechnic Institute, 1889, and his experience with complicated manufacturing problems has been extensive and successful, making him thoroughly equipped to handle his present duties. F. H. Meyers, for many years in the employ of this company, has been appointed assistant superintendent.

Percy A. Ware, who for nearly seven years has been a member of the editorial staff of *The Iron Age*, paying special attention to machinery news, has been appointed Central Western manager of this journal, and will have his headquarters in the American Trust Building, Cleveland, Ohio. His wide knowledge of machinery matters should be most helpful to the interests of our friends in the important section of the country which has been confided to his keeping.

W. T. Johnston, president of the W. T. Johnston Company, Cincinnati, Ohio, has been elected a member of the board of directors of the Cincinnati Commercial Association, to succeed E. R. Blaine, recently deceased.

P. H. Biggs has been appointed manager of the Cleveland, Ohio, sales office of Manning, Maxwell & Moore, being transferred from the Detroit office of that company to succeed O. P. Stehn, resigned.

Philip Frankel, who for the past nine years has been secretary of a number of associations of manufacturers in the metal working trades at Cleveland, Ohio, announces that he will engage in the practice of law with Frederick Frankel, under the firm name of Frankel & Frankel. He will still retain his official connection, however, with the various manufacturers' associations.

L. G. Milne, of the American Mill Supplies Company, London, England, dealing in American mill supplies, pulleys, shafting, hangers, etc., is now in this country for the purpose of looking up additional American goods to sell in Great Britain. He will be located at the office of the George V. Cresson Company 90 West street, New York.

M. A. Hanna & Co., Cleveland, announce the admission on November 1 of H. M. Hanna, Jr., to membership in that firm.

W. H. Worrilow, sales manager of the steel casting department of the Treadwell Engineering Company, Easton, Pa., and who previously served in the same capacity with the Lebanon Steel Castings Company, Lebanon, Pa., has resigned and will be associated with T. S. Quinn, formerly superintendent of the steel casting department, in the manufacture of crucible steel castings, occupying the plant formerly used by the Lebanon Steel Castings Company. The name of the new company to be formed has not yet been decided upon.

D. B. Meacham, of Rogers Brown Company, Cincinnati, Ohio, was elected November 6 president of the Arbitration and Peace Society of Cincinnati, a branch of the International Society.

Willard H. Hunt, who for a number of years was connected with William Adams & Co., iron founders, Philadelphia, Pa., is now general manager of the Coatesville Foundry & Machine Company, Coatesville, Pa.

delphia, Pa., is now general manager of the Coatesville Foundry & Machine Company, Coatesville, Pa.

D. R. Wilson, vice-president and general manager of the Diamond Forging & Mfg. Company, Pittsburgh, has resigned.

President Clarence M. Woolley, of the American Radiator Company, who has just returned to Chicago from Europe, says: "The foreign business of our company is showing a steady growth and the outlook for continued gains is good. Our first work there is educating the people to the superior comfort and convenience of American methods of heating."

Kern Dodge, formerly of the firm of Dodge, Day & Zimmerman, engineers, Philadelphia, Pa., will sail for Europe November 18. He expects to be abroad the entire winter.

Dr. F. Schniewind, of the United Coke & Gas Company, New York, returned from Europe last week.

## Obituary

### Charles H. Phillips

Charles H. Phillips, for the past 24 years a familiar figure in the machinery trade of the East as a representative of the Brown & Sharpe Mfg. Company, died at his home in Providence, R. I., November 3, aged 79 years. Although he had been in failing health for some years, Mr. Phillips made his last trip through his territory, central New York, about two years ago and at that time was cordially received by many of his old business friends. A thorough mechanic and of an extremely amiable disposition, he was always well received by the men with whom he had dealings.

Born in Taunton, Mass., Mr. Phillips became an apprentice of the Mason Machine Company in 1845. After 11 years, he left that company to enter the employ of J. R. Brown & Sharpe, as the Browne & Sharpe Mfg. Company, was then known. After a year and a half with this firm, he became a contract foreman in the old Burnside Rifle Works, a position which he held for nine years, leaving there 43 years ago to become a contract foreman for Brown & Sharpe. While still a foreman, he began to represent the firm on the road and his popularity soon became such that he was placed on the permanent traveling staff. He leaves two sons and two daughters.

PLINY JEWELL, for many years identified with the Jewell Belting Company, Hartford, Conn., died in that city October 31, aged 84 years. He was the son of Pliny Jewell, founder of the house of P. Jewell & Co., which in 1883 was incorporated as the Jewell Belting Company. Pliny Jewell was born at Winchester, N. H., and was reared in the business, which, upon the death of the founder in 1869, was carried on by his sons. From it were established the Jewell Belt Hook Company, the Jewell Pad Company and the Jewell Pin Company, in all of which Pliny Jewell was a director. He was a director of the Hartford National Bank and the Travelers Insurance Company, and a trustee of the Hartford Trust Company. His life was closely and actively identified with important interests of his city and State. He leaves a son, Edward Jewell, Boston, Mass., and a daughter.

DANIEL F. DRAWBAUGH, who unsuccessfully contested the telephone patents granted to Alexander Graham Bell, died at his home near Harrisburg, Pa., November 3, aged 84 years. He was the inventor of one of the earliest telephones, pneumatic tools, hydraulic rams, folding lunch boxes, barrel faucets, measuring machines to be used in wrapping goods, and coin separators. He experimented for years with wireless telephones. For the last month he had been at work on a wireless burglar alarm, and was seized with an attack of apoplexy while in his laboratory.

JOHN L. LEWIS, of Pittsburgh, founder and a former president of the Lewis Foundry & Machine Company, died November 6 at his home in Erie, Pa., of pneumonia, aged 73 years. He was born in Pittsburgh and was educated in the public schools. About 1870, with Mr. Rossiter and a few others, he organized the firm bearing their name, which, after the retirement

of Mr. Rossiter, became the Lewis Foundry & Machine Company. Mr. Lewis was at the time of his death the principal owner. He was an able writer, having contributed many articles on iron and steel to *The Iron Age* and other periodicals. He leaves a widow, three daughters and two sons, E. K. and J. L. Lewis, Jr.

FRANCIS B. WILSON, treasurer of the Jewell Belt Hook Company, Hartford, Conn., died November 6, aged 56 years. A native of New Britain, Conn., his early life was passed in the dry goods business, from which he went to the Jewell Pin Company as its secretary, and in 1908 assumed the treasurership of the Jewell Belt Hook Company.

T. F. SALTER, manager of sales and engineering with the Standard Roller Bearing Company, Philadelphia, Pa., died suddenly at his home in that city October 25, aged 35 years. He was a member of the American Society of Mechanical Engineers and the Society of Automobile Engineers.

AARON F. STOWE, Worcester, Mass., widely known as an inventor and manufacturer of boot and shoe machinery, died October 30, aged 78 years. He sold out his business seven years ago to the United Shoe Machinery Company.

### Pittsburgh and Vicinity Industrial Notes

The Indiana County Street Railway Company, Indiana, Pa., is enlarging its power plant by installing 625 kva. additional capacity. It has placed an order with the Westinghouse Machine Company, East Pittsburgh, for one Westinghouse-Parsons turbo generator unit and one No. 5 Westinghouse Leblanc condenser which will be used to supplement the present station at Two Lick, which consists of a 1000 kva Allis-Chalmers turbine and Phoenix engine.

The Westinghouse Machine Company has also received a contract from the Isthmian Canal Commission, amounting in all to about \$158,000, which involves the manufacture of certain roller trains, roller train tracks and sealing devices, all to the drawings supplied by the commission. The contract constitutes simply a fractional part of the general scheme of lock gates, valves, spillway gates, and the materials involved are as largely as possible drawn from the immediate vicinity of Pittsburgh, the largest purchases outside being certain bronze shapes which are not regularly made in the Pittsburgh district.

The De Bats Crucible Steel Company, Zelienople, Pa., has taken out a West Virginia charter with a capital stock of \$125,000, of which \$100,000 is common stock reported to be subscribed and paid for, while the other \$25,000 is to be preferred stock, and will not be placed on the open market. It has about finished the building of a plant at Zelienople to manufacture crucible tool steels. The incorporators are Louis De Bats, Alfred G. Zehner, F. Edwin Zehner and J. Rader of Zelienople, Pa., and W. H. Shaffer of Harmony, Pa.

Among the recent important orders received by the Westinghouse Electric & Mfg. Company, East Pittsburgh, is a contract from the Northern Ohio Traction & Light Company, Cleveland, which covers the complete electrical equipment of the generating and sub-stations for its lines, extending from Cleveland to Akron, Bedford, Canton, Massillon, Wadsworth, and several smaller cities. The main generating station will be located near Akron, and will contain three 10,000 hp. steam turbine electric generators and three Leblanc condensers. The company has also received the contracts for furnishing the electric locomotives and the electrical equipment for the motor cars, which will be used for propelling traffic on the New York, Westchester & Boston, a subsidiary of the New York, New Haven & Hartford Railroad. The Pressed Steel Car Company, McKees Rocks, is building 30 of these motor cars, and the Westinghouse Company is equipping them with electric motors and control systems. The same railroad has also ordered one 80-ton electric locomotive for switching purposes.

The Wellston Steel & Iron Company, Wellston, Ohio, will light up one of its blast furnaces this month. Both of its stacks have been idle for some time.

The Pittsburgh Emery Wheel Company, Pittsburgh, works at Rochester, Pa., reports a notable increase in its

orders, and expects to operate its works to fuller capacity for the balance of this year than for some months.

The Wheeling Mold & Foundry Company, Wheeling, W. Va., has increased its capital stock from \$500,000 to \$750,000. No material improvements or extensions to the plant are contemplated at this time, the increase in capital being to take care of growing business. The company recently received a contract from the Isthmian Canal Commission for copper conduit work, amounting to \$165,000. As it does not make this class of work, the contract was turned over to another company.

The Gealy Wrench & Mfg. Company, Grove City, Pa., is making a complete line of Gealy pipe wrenches for steam and gas fitting, contracting, mine and other uses. The wrenches have drop forged steel handles, drop forged high carbon steel jaws, teeth carefully tempered, and are made in sizes to take in pipe from  $\frac{1}{2}$  in. up. A. S. White is secretary.

The offices of H. V. Jamison, manager advertising department of the American Sheet & Tin Plate Company, have been removed from the Imperial Power Building to the Frick Building, Pittsburgh. Hereafter all mail intended for the advertisement department should be addressed to advertising department, American Sheet & Tin Plate Company, Frick Building. The remainder of the equipment of the advertising department remains in the Imperial Power Building as heretofore.

The contract for the blooming mill and engine for the new open hearth steel plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has not yet been placed. The contract for the cranes was given out last week. The Whiting Foundry Equipment Company, Harvey, Ill., through its Pittsburgh office, of which Paul Hay is manager, received a contract for six one-motor jib cranes for handling spouts at the open hearth furnaces, which makes a total of 89 cranes of this type sold by that office. The Morgan Engineering Company, Alliance, Ohio, received the contract for the special ladle cranes, stripping cranes, ingot cranes and charging cranes. The Alliance Machine Company, Alliance, Ohio, received the contract for the clam-shell bucket cranes and also for seven standard traveling cranes of 10 to 60 tons capacity each.

Mackintosh, Hemphill & Co., Pittsburgh, builders of heavy rolling machinery of all kinds, have bought the office building formerly occupied by the Zug Iron & Steel Company at Thirteenth and Pike streets. It will probably be razed and a new office building erected to be occupied by the purchasers.

The Erie City Iron Works, Erie, Pa., through its Pittsburgh office, of which T. H. McGraw, Jr., is manager, has sold a repeat order to the Standard Sanitary Mfg. Company, New Brighton, Pa., for a 400 hp. Erie City horizontal water-tube boiler, equipped with Green chain grate stoker.

The eight Stirling boilers referred to in the description of the Upson Nut Company's new steel plant at Cleveland, Ohio, given in *The Iron Age* of November 2, are equipped with Williams feed water regulators, supplied by the Williams Gauge Company, Pittsburgh.

A non-oxidizing electrically-heated soldering copper has been announced by the General Electric Company. The research laboratories of the company, it is stated, have discovered a process of treating the copper, making it non-oxidizable under high temperatures and non-corrodible by the acids used in soldering. The coloring process, so called, actually changes the characteristics of the copper to an appreciable depth, it is urged, and does not merely coat the surface. The discovery thus offers a soldering copper which may be kept hot continuously and resists rapid wasting of the copper.

The Canadian Pacific Railway Company, P. B. Motley, engineer of bridges, Montreal, has adopted the design of the Strauss Bascule Bridge Company, Chicago, for a 336-ft. double leaf, single track bascule over the United States Ship Canal at Sault Ste. Marie, Mich.

The Toledo Bridge & Crane Company, Toledo, Ohio, has completed arrangements whereby A. W. Wyckoff & Co., 2219 Farmers Bank Building, Pittsburgh, Pa., will represent it in the sale of cranes in the Pittsburgh district.

### The Industrial Education Convention

The fifth annual convention of the Society for the Promotion of Industrial Education, held in Cincinnati last week, was said to be the most successful meeting in the history of the organization. Many from distant points were present, and at all the meetings there was a large attendance of enthusiastic local supporters. The visitors were very much interested in the different educational institutions of Cincinnati, and among those inspected were the University of Cincinnati, Ohio Mechanics Institute, Continuation School and the Woodward High School. The local manufacturing plants also came in for a share of attention.

At the final meeting Fred A. Geier, president Cincinnati Milling Machine Company, was elected president of the society, but he declined the honor, stating that more effective attention could be paid to the movement by an Eastern man. W. C. Redfield, Congressman from the Sixth District of New York, who is also vice-president of the American Blower Company, was then selected as president for the coming year. The other officers chosen are as follows: Vice-president, Howell Cheney, Cheney Silk Company, South Manchester, Conn.; treasurer, Frederick B. Pratt, Pratt Institute, Brooklyn, N. Y. J. Henry Cone, of Cincinnati, now secretary of the society, will doubtless be re-elected by the executive committee.

For a term of three years the following new members were elected to the board of managers: James P. Munroe, Boston, retiring president; Fred A. Geier, Cincinnati; Miss Jane Addams, Chicago; F. J. McNulty, Springfield, Ill.; W. A. Laymen, St. Louis; Louis Rouillion, New York; H. E. Miles, Racine, Wis.; Howard P. Eells, Cleveland; Walter Laidlaw, New York, and Charles A. Bookwalter, Indianapolis.

Fred A. Geier, on behalf of the National Metal Trades Association, tendered the society a check for \$1,000, which was accepted with thanks.

The executive committee will select a meeting place for next year at some future date.

**Two New Orders for Lake Vessels.**—The American Shipbuilding Company has taken two orders in the past week, one for the largest hopper, self-unloading conveyor steamer ever built in the United States and the other for a Welland Canal sized package freight steamer 257 ft. over all. The latter will be built at the Port Arthur, Ont., yard of the shipbuilding company. The conveyor steamer will engage in the ore, coal and stone trade. Her keel will be 416 ft. long and she will be 439 ft. overall, 54 ft. beam and 29 ft. deep. Power will be furnished by a quadruple expansion engine with 19-in. high pressure, 27½-in. first intermediate, 40-in. second intermediate and 58-in. low pressure cylinder with 42-in. stroke. Three Scotch boilers 11 ft. 6 in. in diameter and 11 ft. 6 in. long, built for 210 lb. pressure. A second package freighter is under consideration and if the oil burner Toller, now running between Montreal and Port Colborne, is as successful as expected, this second vessel will be equipped with Diesel engines. This would be the first ship on this side the Atlantic to be driven by internal combustion engines.

**Woodward Buys Vanderbilt Furnaces.**—Formal announcement is made of the sale of the properties of the Birmingham Coal & Iron Company to the Woodward Iron Company. The properties mentioned consist of two blast furnaces and 51 coke ovens at Vanderbilt, Ala., an aggregate of 160 additional ovens at Blossburg and Shortcreek, Ala., approximately 40,000 acres of coal land and 2500 acres of red and brown ore land. It is understood that the Woodward Company will extend and develop the properties acquired and continue all operations as at present.

The American Society of Engineer Draftsmen will hold its regular monthly meeting in the Engineering Societies Building, 29 West Thirty-ninth street, New York, at 8.15 p. m. November 16. The programme provides for a paper by Walter Dalton on "Construction Work West of the Missouri River" and a lecture by Charles W. Reinhardt, chief draftsman Engineering News Publishing Company, on "Comprehensive Drafting and Lettering."

### The Connellsville Coke Trade

The condition of the Connellsville coke trade is set forth as follows by the Weekly Courier, Connellsville, Pa.:

The Connellsville coke trade is practically stationary. The figures show a gain in production and in shipments, but the increased production was confined to the furnace interests and will not affect the merchant trade. It indicates, however, that the furnace interests are stocking coke again. These interests have recently been shipping their stock coke to their various consuming points and clearing their coke yards. The reason or purpose of the present policy is not announced, but it is probable that it is merely a reasonable safeguard against the uncertainties of production during the winter season. The merchant operators have 68 per cent. of their ovens in blast, but they are being operated practically full.

Production made a gain last week of 9535 tons as compared with the week before, the total being 320,301 tons as against 310,766 tons. The gain was entirely with the furnace interests.

The number of ovens in operation in the region was increased by the firing of 40 ovens at Davidson, and decreased by the blowing out of 28 at Clarissa, making a net increase of 12 ovens.

The American Chemical Society, New York Section, announces that its second regular meeting of the session of 1911-12 will be held in conjunction with the Society of Chemical Industry and the American Electrochemical Society, in Rumford Hall, 50 East Forty-first street, New York, at 8 p. m., Friday, November 10, with a symposium on fuel economy as follows: J. W. Loveland, B. T. Babbitt, Inc., "Some Attempts at Economy in Steam Making;" Prof. Chas. E. Lucke, Columbia University, "Fuel Gasification for Industrial Purposes;" Ed. A. Uehling, Uehling Instrument Company, "A Continuous Carbon Dioxide and Temperature Recorder and Its Application to Combustion Efficiency;" Charles A. Davis, Bureau of Mines, Washington, "Is Peat an Important Fuel in America?" Horace C. Porter and F. K. Ovitz, Bureau of Mines, Pittsburgh, "Deterioration and Spontaneous Heating of Coal in Storage;" Perry Barker, A. D. Little, Inc., "The Distribution of Heat in Boiler Plant Operation."

The C. O. Bartlett & Snow Company, Cleveland, Ohio, reports the receipt recently of the following orders: A sand crushing and drying plant, including a boiler and engine house, for the Warren-Silica Company, Torpedo, Pa.; a 4-roll coal crusher for the National Starch Company, Oswego, N. Y.; a sand and gravel washing plant for the Greenville Gravel Company, Greenville, Ohio; a fuller's earth dryer for G. D. Robbins for shipment to Texas; coal tippie and mine cars for the W. K. Steele Coal Company, Mossy Bottom, Ky.; coal conveyor for the Cleveland Electric Illuminating Company; two barrel elevators for the New Jersey Zinc Company; coal weighing larries for the Consolidated Gas & Electric Company, Baltimore, Md., and a truck haul and retarder for the Stow-Fuller Company, Cleveland.

Autogenous and electric welding is to be made the subject of the November meeting of the American Society of Mechanical Engineers to be held at 8.15 p. m., November 14, in the Engineering Societies Building, 29 West Thirty-ninth street, New York City. Three papers are to be presented. One is to deal with the general aspect of the subject, the origin and principles of each process and the apparatus used in each, by H. R. Cobleigh, International Steam Pump Company; and two on special phases, thermit welding, by G. E. Pelissier, superintendent Goldschmidt Thermit Company, and electric welding by C. B. Auel, assistant manager of works, Westinghouse Electric & Mfg. Company.

The partnership between Kern Dodge, Charles Day and John Zimmerman, doing business under the name of Dodge, Day & Zimmerman, engineers, Philadelphia, Pa., has been dissolved by mutual consent. Charles Day and John Zimmerman will continue the business under the name of Day & Zimmerman.

## September Iron and Steel Exports and Imports

The report of the Bureau of Statistics of the Department of Commerce and Labor for September shows a decrease in both the exports and imports of iron and steel as compared with the figures for August. The total value of the exports of iron and steel and manufactures thereof, not including iron ore, was \$20,534,139 in September as compared with \$20,704,154 in August, while the value of similar imports in September was \$1,996,288 against \$2,282,466 in August.

The exports of commodities for which quantities are given totaled 179,859 gross tons in September against 176,269 tons in August. The details of the exports of such commodities for September and for nine months of the fiscal year ended with September, compared with the corresponding period of the previous year, were as follows:

Exports of Iron and Steel.

Commodities.	September		Nine months.	
	1911. Gross tons.	1910. Gross tons.	1911. Gross tons.	1910. Gross tons.
Pig iron.....	10,258	12,997	95,636	83,862
Scrap.....	4,105	1,915	61,701	16,867
Bar iron.....	1,578	1,665	13,879	14,928
Wire rods.....	1,734	1,044	12,829	16,897
Steel bars.....	10,919	10,397	93,716	78,934
Billets, ingots and blooms.....	19,754	4,480	181,178	14,162
Steel rails.....	38,210	20,538	349,942	263,782
Iron sheets and plates.....	12,030	7,877	85,058	77,008
Steel sheets and plates.....	21,040	16,615	167,223	1,322,583
Tin and terne plates.....	6,461	808	42,556	8,394
Structural iron and steel.....	16,284	10,333	158,457	114,552
Barb wire.....	8,412	5,953	63,140	54,635
All other wire.....	10,107	6,801	95,460	67,750
Wire nails.....	2,095	2,597	35,156	32,283
Cut nails.....	1,130	661	8,285	5,371
All other nails, including tacks.....	1,972	1,136	9,584	7,408
Pipe and fittings.....	14,670	12,960	144,818	118,100
Totals.....	179,859	118,777	1,618,618	2,297,516

The imports of commodities for which quantities are given totaled 13,534 gross tons in September as compared with 19,685 tons in August and 30,969 tons in September, 1910. The details of such imports for September and for nine months of the fiscal year ended with September, as compared with corresponding periods of the previous year, are as follows:

Imports of Iron and Steel.

Commodities.	September		Nine months.	
	1911. Gross tons.	1910. Gross tons.	1911. Gross tons.	1910. Gross tons.
Pig iron.....	7,875	16,668	115,874	176,615
Scrap.....	946	3,186	14,371	65,457
Bar iron.....	1,644	2,508	20,839	31,211
Billets, bars and steel plates, n.e.s.....	1,877	3,918	23,244	36,026
Sheets and plates.....	139	704	1,688	5,465
Tin and terne plates.....	206	2,720	12,868	53,802
Wire rods.....	845	1,265	12,128	15,781
Totals.....	13,534	30,969	201,012	384,357

It will be observed that comparatively large exports and quite small imports continue to characterize the tin plate movement.

The imports of iron ore in September were 184,456 gross tons against 175,183 tons in August and 208,892 tons in the month of September, 1910. The total importations of iron ore for nine months of the fiscal year ended with September were 1,362,352 gross tons against 1,990,917 tons in the corresponding period of 1910. Of the September imports of iron ore 112,889 tons came from Cuba, 26,487 tons from Spain, 25,200 tons from Newfoundland, 6830 tons from Canada, 6545 tons from Sweden and 6505 tons from other countries.

The total value of exports of iron and steel and manufactures thereof, not including iron ore, for nine months of the fiscal year ended with September was \$185,118,660 against \$146,924,302 in the corresponding period of 1910. The total value of the imports of iron and steel and manufactures thereof, exclusive of ore, for nine months of the fiscal year ended with September was \$22,220,521 against \$30,439,998 in the similar period of 1910.

## An Electric Generator of 30,000 Horse Power

The spectacle of the successive stopping of seven large vertical steam engines, each connected to an electric generator of no less than 3500 kw. capacity, and the assumption by a single generating unit of the load of each engine as it was put out of commission inaugurated the operation of a steam-turbine electric generating unit of

20,000 kw. capacity at the Waterside station of the New York Edison Company in New York City on October 3. To get the full effect of the picture, one must realize that the seven engine units occupied one side of the station from end to end, while the steam turbine unit, which was built by the General Electric Company, rose to a modest height above the floor on the opposite side of the generator room in the shape of a smooth cylindrical steel casting. To lend added interest to the occasion, the turbine was started on the task which it is to perform indefinitely by former Secretary of the Treasury George B. Cortelyou, now president of the Consolidated Gas Company of New York, who while in the act of turning the throttle wheel was photographed by the camera. A large number of guests had the opportunity also of noting the additional 20,000-kw. steam-turbine units in process of erection, and a buffet luncheon brought the ceremonies to a close.

While the unit is technically known as one of 20,000 kw. capacity, from information given out by the New York Edison Company, the generator may be regarded as one of 30,000 hp., or sufficient to supply all the current needed for the city of Providence, R. I., or any other city of about 250,000 population. It had been calculated also that the generator would supply a chain of cities such as Albany, Syracuse and Utica. Another interesting way of indicating its power is that it is equal to that of the largest ocean liner, or equal to 30 of the largest express locomotives or to a line of horses six abreast and 10 miles long, all of the horses, it is presumed, pulling equally well and none of them fractious.

In more technical language the prime mover is credited with a steam consumption of 14.4 lb. of steam per kilowatt-hour when the load is 15,000 kw., and 15 lb. per kilowatt-hour when the load is 10,000 or 20,000 kw., the pressure being 175 lb. gauge, the vacuum 28½ in. and the superheat of the steam 100 deg. The machine is 17 ft. 6 in. x 17 ft. in plan; its height above the base is 35 ft. 7 in.; the weight, 420 tons, and the weight of the heaviest piece 110 tons. The generator is a 4-pole machine, giving three-phase 25-cycle 6600-volt current at a speed of 750 r.p.m. The total number of wheel buckets is 7200, and the velocity of the buckets is roughly 6 miles per minute, or a travel of over 8600 miles per day.

## An Album on Concrete Engineering

A remarkable publication has been issued by the Consolidated Expanded Metal Companies, Pittsburgh, Pa., illustrating in part the Xpantrus system of reinforced concrete and incorporating at length the theories and methods of design of reinforced concrete structures. The special bar of the Xpantrus system is shown in relation to fractures or failures to which concrete beams have shown themselves heir, to indicate how the design of the bar has had in mind overcoming the inherent weakness of the concrete portion of beams. There are no less than 53 pages given over largely to both the practical and theoretical sides of the problem, and the remainder of the 102 pages of the album comprises extended tables of loads which different sizes of beams for different spans and other requirements will sustain. The handbook is of the loose leaf form, bound in flexible covers and has the merit of being convenient as well as valuable. The publication, which can without doubt be had by those interested in the subject, is a commentary on the special engineering service often obtainable from manufacturers of what may be called engineering materials.

The United States District Court has dismissed the application for the appointment of a receiver for the St. Louis Blast Furnace Company. It also denied a petition for an injunction to prevent the holders of the company's \$200,000 bonds from foreclosing the mortgage on the realty and plant. Most of the bonds are held by the State National Bank of St. Louis and the petitioners for a receiver represent four bondholders. In denying the petitions Judge Dyer said that the affidavits in the case show that the property of the company is valued at from \$300,000 to \$400,000 and that an effort is now on foot to reorganize the company. He held that the majority of the bondholders appeared to be in favor of this reorganization. The plant has been closed down since last July. The reorganization plan is being worked out by Eastern capitalists.

# Scientific Management at United States Arsenals

## Results Accomplished at Watertown

About three years ago the Ordnance Department of the United States Army began to devote attention to the subject of scientific management as applied to its manufacturing operations. Previously to the last fiscal year the subject had been considered more as an experimental detail of shop management, but it has now assumed sufficient importance to justify a reference to it in the annual report of the Chief of Ordnance, General William Crozier, of which an abstract is presented below:

### The Object of Scientific Management

It is unnecessary here to attempt any detailed description of the principles of scientific management, or the particular application of those principles which constitute the Taylor system, since both have been the subject of extensive discussion in the public prints and have been very fully described in various treatises. It may be said, however, that the principles are no new discovery nor are they claimed to be such by the advocates, and that the many details have been the subject of special and laborious attention for many years. The basic idea is the application of educated and scientifically trained intelligence to those operations of manufacture which were formerly considered either as of too small importance to attract much attention or as belonging entirely to the practice of a trade, and were therefore left to the judgment or choice of those immediately and practically connected with the operations. The best method of doing certain work has to be determined by careful and scientific consideration of a number of variable elements, whose successful combination is a matter of high skill and careful observation. Efficient work requires that the workman must be given the elements of speed of running the machine, feed, depth of cut, and a cutting tool by some one who knows what the combination ought to be.

### Methods at Arsenals and Outside Compared

When the claims made by the advocates of scientific management first attracted the attention of the War Department, the question of the efficiency of existing shop methods was naturally raised in order to estimate the probable value of a change. It is believed that the shop methods in effect at the different arsenals were fully abreast of the best general practice in private industries of the same nature.

While, therefore, the general conditions would compare favorably with commercial practice, and while in those arsenal shops engaged in turning out large quantities of small arms, ammunition, etc., the successive operations had been co-ordinated and delays eliminated so that such shops did not afford as wide a field for improvement, it was concluded that the general machine shop and job work practice in the arsenal shops might be materially improved by the methods of scientific management.

### Installation at the Watertown Arsenal of Some of the Elementary Features of Scientific Management

With this object, something over two years ago, the trial, at the Watertown Arsenal, of some of the elementary features of what is known as the Taylor system was authorized, with the intention of testing out these features thoroughly and determining their value before proceeding further.

An expert in shop management was employed, and under his guidance the method of putting work into shops was so systematized that orders for manufacture now go from the office to the shops with a much more complete arrangement and supply than formerly of drawings, specifications, lists of parts, bills of material and orders relating to particular parts of the structure to be produced, so that the foremen are relieved from much of the semi-clerical and other office work which they used to have to do, and

for which they are not well qualified and can not attend to without a neglect of other more appropriate duties.

The work of planning the course of component parts of the structures to be manufactured through the shops of the arsenal has been systematized so that this course shall be regular and orderly, and the work shall at no time be held through the lack of some component which is not at hand when needed, and that no wasteful effects shall arise through congestion of work at particular machines, or the idleness of other machines, or workmen while waiting for the assignment of operations which should have been planned for them in advance.

### Planning Room

For this purpose there has been installed a planning room equipped with personnel and appliances for the regular production of what might be called the time tables of the thousands of pieces which must travel through the various shops on their way from the stage of raw material to that of finished product, without collisions or unnecessary delays. The issue of material from the storehouses to the shops has been systematized, and the task of estimating the amount of material required placed among the duties of persons other than those who are to make use of the materials in manufacture, so as to reduce the likelihood of overestimates; to insure the possession of the material at the time when it is needed, prevent the disappearance of material while awaiting use, and the duplication of issues, and to insure the return to the storehouse of surplus material; with the result of a useful reduction of the amount of material issued, and supposedly used for particular fabrications.

The care of material in store and the accountability for it have been systematized so as to insure more frequent and accurate check of the material on hand with the clerical statement of what ought to be on hand. The method of caring for machines and tools has also been systematized so as to preserve their efficiency; for example, the proper maintenance of the condition and tightness of the extensive system of belting, and the systematic tempering and grinding of cutting tools. Such improvements have been made in the efficiency of certain machines as to greatly increase their output.

### Reduction in Cost of Production

The practical effect of these methods at the Watertown Arsenal has been a material reduction in the cost of general manufacture at that place. The most important manufactures at this arsenal are seacoast gun carriages, which are large structures with hundreds of parts, requiring many months for their completion. It is therefore difficult to give at this time many examples of the decrease of cost of production due to the improvements which have thus far been made, but the following are illustrative:

Five different orders, each for 40 sets of parts for the alteration of 12-in. mortar carriages, have been given in comparatively recent years. The direct labor cost per set under the old methods was \$480, which was reduced to \$275 per set as a result of the improved methods introduced, while the cost of indirect labor and other shop expenses was reduced from \$335 to \$332 per set. Similarly, the direct labor cost of 6-in. disappearing gun carriages was reduced from \$10,229 to \$6,590 per carriage, and that of indirect labor from \$10,263 to \$8,956. These satisfactory results have been attained without affecting the pay of the employees or requiring special exertion by them.

The previous practice at the Watertown Arsenal was the same as that still followed in practically all machine shops the management of which has not yet appreciated the wastage that scientific study of the usual practice is claimed to reveal. The principal elements of this wastage include failure to appreciate and to utilize the full and

efficient power of machine tools, lack of planning by which machines are frequently without work, the employment of skilled workmen to bring work to machines or to procure and grind their cutting tools, etc. By the establishment of specified feeds and cuts, the work done by the machines is increased, and by regulating the flow of the work so that it shall be even and continuous, and employing laborers and messengers to supply the work and tools to the skilled workmen, the latter are able to devote the time and labor which they previously expended in other ways to work proper for their grade.

In view of the successful results obtained, a board of officers assembled at the Watertown Arsenal recommended the adoption of those methods for similar work at other manufacturing arsenals, with such changes in details as local conditions seemed to require. In accordance with this recommendation, preliminary steps toward introducing the methods, so far as they are applicable, have been taken at several other arsenals. Due, it is believed, to an erroneous conception of the purposes which it is intended to accomplish by these methods, the employees at one of the other arsenals to which the changes are to be applied have protested against the installation. They have been assured that this department does not contemplate the introduction of any system, or any features of a system, which is oppressive or unjust. As stated above, the features which have been in effect at the Watertown Arsenal for about two years, and which are all which it is intended to introduce at the other arsenals at the present time, do not affect the wages to be paid to employees or the exertions to be made by them.

The employees have been fully informed as to the department's intentions in this matter. The explanations given them should suffice to allay any apprehension that may have been aroused by a misunderstanding of the matter, and induce them to await the result of the practical trial of the methods in question with confidence that their proper interests are not endangered.

#### Economy for the Government and Increased Wages for the Employees

In addition to the study of methods, scientific management usually includes some plan for demonstrating to the workman that he can increase his production without unduly exerting himself, and for stimulating him to do so by offering him increased pay for such increase in output. The advocates of the Taylor system claim with great positiveness that the features of that system which do affect the employees' pay, if applied, will result in further very marked economies to the government, accompanied by increased pay and conditions generally satisfactory to the employees. These claims they base upon the result of actual experience in shops in which the system has been put in operation. The confirmation of the claims as to the advantages of the features first installed, which the practical test at Watertown afforded, lends such force to these further claims that, in the absence of any positive evidence to the contrary, they can not be disregarded by an administrative officer honestly desirous of serving the interests of the government.

Briefly stated, these features contemplate offering additional pay to workmen for work performed in the manner and sequence selected from the results of careful study and completed within the time which that study indicates as sufficient for the purpose. The saving in time results, aside from any increased efficiency of machines, chiefly from the effect of the instructions given the workmen, by which their effort is more advantageously applied, and will involve no exhausting exertion on their part, nor such as should be disagreeable. If the work is not performed within this given time the workman receives his regular daily pay; never less than his regular pay. The proposition is simply that if he follows his instructions, and by so doing saves time, his pay will increase in proportion to the time saved. For example, a workman has been doing a piece of work in 190 minutes. After painstaking study of the job and of all the means of saving time the man is carefully instructed as to these means, and is told that for every minute saved, within, say, 120 minutes, he will be paid for half a minute at his regular rate, in addition to his regular daily pay; and that it is thought that he can do the work in 72 minutes, in which time the increase over his regular pay will amount to 33½ per cent.

The average premium of all machinists who have been

placed on premium work in the machine shop at the Watertown Arsenal has been 25 per cent. of their wages.

The real point in the matter, however, is the determination, by a method of scientific common sense, of the time within which the work can and should be done, and the particular method of compensation as a stimulus for meeting this time is not important.

#### Strike of Molders at Watertown Arsenal

Following the successful installation of the system in the machine shop of the arsenal, an attempt was made to extend the improvement in methods to the foundry, where there was thought to be still greater opportunity for economies which would result advantageously both to the employees and to the government. There has been no opportunity for making a time study, such as had preceded the placing of some mechanics under the premium system in the machine shop, but the advantages in that shop had been so great that it was concluded that part of them could be had by placing some of the molders under the premium system, while basing the time within which premiums might be earned upon the record of previous production. It was well known that this time was greater than it should be, but, as it was intended at this time to apply it only to certain work which was not to be repeated, it was considered wise to allow the workmen the advantage of this liberal time for the sake of the economies which would also result to the government.

Several molders were given jobs under this plan, but it was not successful in getting any material reduction of the time occupied in doing the jobs or in producing premiums for the men. A time study was therefore made on a mold for the pommel of a pack saddle, of which a considerable number were required. Under the day-wage system, a molder had been making these molds in about 53 minutes each. The time study showed that they ought to be made in 24 minutes each, and, in accordance with the usual rule, premiums were to commence to be earned after the time represented by the 24 minutes plus two-thirds of the 24 minutes, or 40 minutes. Both the molder and the foreman, however, thought that this time was too short, and the officer in charge of the shop therefore increased it arbitrarily to 50 minutes.

However, although no objection to the time study was made at the time, on the same evening a meeting of the molders was held, and it was decided that they would not submit to the process, and when, on the following day, attempt was made to carry it on with reference to another man on another job, the molders all struck, leaving their work. Their places were being filled by other men employed when, after a few days, they returned to work under the same conditions as those for which they had left, with the information that the whole matter would be made the subject of an investigation.

After the return of the striking molders to work, the man who had been on the pommel job was again put at it, and occupied the same time as before, about 53 minutes each. One of the new men who had been taken on was, therefore, assigned to this job, when he made the molds at an average of 20 minutes each, the castings from them not being distinguishable from those made by the former molder. That this time of 20 minutes each was not difficult of accomplishment is shown by the fact that this man on one occasion did a whole day's work at the rate of 16 minutes each, and on one occasion was observed to make one of the molds in 10 minutes; also, one of the striking molders after his return made them in 28 minutes each.

When these molds were produced in 53 minutes each their labor cost, including helper and all the direct and overhead charges, was \$1.17 each. When they were made in 20 minutes each, this cost was reduced to 54 cents; there was thus a saving of 63 cents on each mold, and as, at the 20-minute rate, 24 molds were made per day, the net daily saving to the government on this one molder's job was \$15.10. The pay of the time-study man, a high-priced specialist, was \$15 a day; so that his entire day's pay was saved on this one job. When the molds were made at the rate of 53 minutes each, under day wages, the molder earned \$3.28 per day; when they were made in 20 minutes each, under the premium system, the molder earned \$5.74 per day.

During the month of September last 29 men, in the foundry and machine shop, were working more or less time under the premium system. Their total pay for the

time that they were so working, at their regular rate, was \$2,121.10; the premiums which they earned amounted to \$279.19. They thus increased their regular daily pay by an average of something over 13 per cent. It is a pertinent inquiry who was hurt by this process? The men were certainly benefited in their compensation. They were not required to overexert themselves, nor directed to speed up, and the best evidence obtainable is to the effect that the rate at which they worked was not such as ought to have been other than pleasant.

#### Misapprehension of the System

After the return of the molders to work, Lieut.-Col. John T. Thompson, from the office of the Chief of Ordnance, was directed to proceed to the Watertown Arsenal and make an investigation of the strike and the events preceding it. From his report, it appears that the objection on the part of the dissatisfied workmen is to the process of making time study, which generally precedes the setting of a premium time on a new job; and the underlying cause of this objection appears to be an apprehension that advantage will be taken of the knowledge gained by the time study to speed up the workmen with a temporary incentive to work fast, and then to use the knowledge thus gained to require the increased rate of production at the same old pay.

It seems quite probable that men might be influenced by arguments of an agitative nature to such an extent as to cause them to lose sight of the fact that the government is not in the "sweat-shop" business, and that there are plenty of instances in the Ordnance Department itself in which employees are continuously earning, by stimulated efforts under the piece-work system, wages very considerably in excess of those paid to persons of the same degree of skill under the day-wage method. A little inquiry would show that there are many employees in the department working at employment which can be readily learned in time very much less than that required for the apprenticeship of a machinist, for instance, who are regularly earning the wages of a good machinist, paid by the day.

If the employees of the Ordnance Department were left to the guidance of their own experience in the government employ, it is believed that such experiments as the one now making at the Watertown Arsenal would be given a fair chance. The theory under which the trial is being made at the Watertown Arsenal is that the current rate of wages is not just compensation for the employees' best production, but that it is compensation for the character of production under which the rate has grown up, which is very far from the best. It is believed that better production can be had by proper care on the part of the management, but that continued high production is impossible without correspondingly high wages. It is also considered that there are differences between men which should be taken account of in their compensation.

#### Conclusion

The department has not yet reached a conclusion as to the extension to other arsenals of the part of the Taylor system of shop management which affects the workmen, and it is not intended to do so in advance of further trial at the Watertown Arsenal, but it seems certain that, either by this system or by some other, it ought to be possible to secure better co-operation of the employees among themselves and between them and the management than has been had in the past.

#### Statement by Secretary Stimson

Following is a statement by Secretary Stimson in regard to the War Department's experiments with the theory of scientific management, made in explanation of his personal position and the attitude of the department:

"The War Department has given considerable attention to the utilization of the methods of scientific management in the various arsenal shops of the government. The Watertown Arsenal has been used practically as an experiment station, with a view to trying out the theory before applying it generally. The results thus far are highly gratifying and full of promise. There has been an undoubted increase in the efficiency of manufacture at the shop and a material reduction in the cost of manufacture, but at the same time, and to my mind of even more importance, these results have been obtained without in

any wise endangering the interests of the workingmen, either by decreasing their pay or requiring unpleasant exertion of speeding up. On the contrary, any increase in real efficiency must inure to the benefit of the workingmen.

"I have been too long and too vitally interested in and active in movements which make for the advancement of the conditions of labor for me now to lend even the slightest encouragement to any theories which work counter to the true interests of labor. To my mind, scientific management can and deserves to prevail only where increased efficiency means increased human efficiency and the workingmen's participation in the rewards resulting from efficiency. It means a betterment and in no wise impairment of the conditions of labor. A change for that kind of betterment is the only kind of change which the government will permit through the installation of any scientific management. We are still very much in the experimental stage, but I have strong hopes that, by co-operation and a willingness to see the facts fairly, economies will result to the government, betterment to workingmen and a more satisfactory and more human relation between the two in the future than in the past."

Denouncing the indorsement of the Taylor system of scientific shop management by the government as unjust and predicting a general walkout of the 7000 or 8000 machinists employed by the War Department should it be adopted, James O'Connor, president of the International Association of Machinists, issued a statement at Washington, D. C., November 3, in which he said the machinists are unalterably opposed to the system. He added: "If the Taylor system is put into operation in government shops by Secretary Stimson, as he has stated, one of two things will result—either Congress will enact legislation relieving machinists of the unjust rigors of the so-called 'scientific shop management' or there will be a cessation of work."

#### A Monumental Bridge Contract Let

The 3½ miles of steel bridges, including an arch span which will be the longest in the world, projected some years ago as the New York Connecting Railroad for closely joining New England to the South and West by the way of Brooklyn, have taken definite shape by the award announced last week for some of the structural work. The American Bridge Company has been given the contract for the arch span and the two adjacent or approach spans, totaling 36,000 tons of material. The viaducts remaining have not yet been placed.

The structure is one of great importance from the commercial standpoint, and also one of monumental character, partaking of the nature of a gateway to Long Island Sound. In fact, it was about five years ago that plans for the structure were presented by the chief engineer, Gustav Lindenthal, and his associated architect to the Municipal Art Commission of New York. The bridge is substantially a connecting link between the systems of the New York, New Haven & Hartford Railroad and the Pennsylvania Railroad, with its systems on Long Island operated by the Long Island Railroad.

From the northern part of New York City the bridge is to span the strait known as the Bronx Kills, then cross in succession Randall's Island, the strait known as Little Hell Gate, next Ward's Island, and finally the Hell Gate channel, over which will be the arch span leading into Long Island. The trackage system is planned to allow for passenger service from this portion of Long Island through the tunnels under the East and North rivers, thereby communicating with the Pennsylvania station in New York, and for freight to South Brooklyn, where by ferry transfers car floats may reach Greenville, N. J., for distribution over the lines of the Pennsylvania system.

The connecting railroad will be about 12 miles in length and the steel viaduct forming the bridge part is to provide for four tracks with the rails laid on a stone ballast to diminish noise. The total amount of steel involved is between 80,000 and 90,000 tons. The arch span itself will measure 1000 ft. between abutments, and thus exceed in clear span by 160 ft. the longest arch span now in existence, that of the steel bridge immediately below Niagara Falls. Like other bridge structures span-

ning national waterways, the bridge must have a clear height above mean high tide of 135 ft. The crown of the steel work of the arch will, however, extend about 130 ft. above that level, making the topmost point about 265 ft. above mean high tide. The tracks will pass through the arch perhaps 140 ft. above the water. The towers erected above the abutments of the span are to have a granite base and a molded concrete superstructure, this designed with a special reference to the monumental character of the bridge. The early plans comprehended the use in part of the tower for accommodating offices for the bridge operation. Some of the steel members measure in cross-section probably as much as 9 ft. in the extreme and weigh 100 tons each. The work contracted for at the present time must be completed within 30 months.

### Swedish Steels

An interesting paper on the above subject was read before the New York Railroad Club, October 20, by A. R. Roy of the Swedish Iron & Steel Corporation, 12 Platt street, New York City. Mr. Roy introduced his paper with considerable historical data regarding the use of iron by the ancients, leading up to the fact that Swedish iron came to be recognized as the best base for making the highest grade of steel. He then gave the following reasons for the superiority of Swedish iron:

"1. Because nature gave Sweden the best iron ore in the world. Examining this fact, it is noticeable that the best quality of Swedish ore is dependent largely on the environment that it is buried in. It would appear that the chemical amalgams inherent in the ore in the state of nature are such that when the ore is worked it imparts to the final product qualities not to be found in other irons, although much of this amalgam is apparently eliminated in the process of manufacture. The most recent discovery appears to be that vanadium is found present in the natural ore. Analysis of Swedish iron shows no trace of vanadium. It is possible that in the furnace the heat eliminates all trace of vanadium, but not before it has imparted to the iron the purity that makes the ore of Sweden so famous.

"2. Charcoal, the purest fuel, is used in Sweden of necessity, as Sweden has no coal beds of her own. It may be unfortunate for the wealth of Sweden's ironmasters that there is no coal handy for use, but it is a decided advantage to the world in general. Could Sweden use coal in her furnaces, the chances are that the quality of her iron would deteriorate. Charcoal is practically the only fuel that is used. In fact, the laws of Sweden allow no mines to be opened unless there is a forest in the neighborhood large enough to supply the charcoal required for manufacture. The laws further protect the manufacturer by giving him the sole right to a certain amount of sylvan fuel in proportion to the size of the mine he operates. To make this clearer, suppose a family with the right to the charcoal supply of a forest is divided by any contingency, the law gives to the man who operates the mine, although he might have only a small interest in the whole property, the sole right to all the fuel of the forest assigned to his mine. These laws insure the use of charcoal for the making of iron. By using charcoal, the gases that are impregnated into the molten fluid steel by the employment of coal or coke are completely avoided. Naturally, a steel is produced that is much purer than any that can be made with coke or coal, as is the custom in other countries. Further, large quantities of iron are never produced at a time. The consequence of this is that greater care is taken in the manufacture, and there is a more even quality and homogeneity in the steel produced for the simple reason that it is easier to boil more thoroughly a small quantity of matter than a larger one—and boil it evenly through and through.

"3. Because greater care is taken in Sweden in manufacturing. The use of charcoal necessarily prohibits production on a large scale; therefore, quality, not quantity, is Sweden's principal aim. It has just been mentioned above that Sweden manufactures in small quantities and here is the reason for it. It is not possible to produce very large quantities of charcoal because the forests are naturally limited, so they are obliged to use small quantities and with great care. They have to make the most of what they have got. It is the law of self-preservation. Not only

have they to make the most of the little they possess, but they have to be economical. Charcoal is not so cheap as coal. A few blasts down in the cavities of the earth will produce a few hundredweights of coal, but it means much more labor in producing a basketful of charcoal. A tree has to be cut, the wood has to be dried, and then it has to be burned with care by men skilled in the making of charcoal, for the wood must not be burned too much, before a basketful of charcoal can be put on the market. All this means time and labor, and the two together make capital."

Mr. Roy explained that Sweden long allowed other countries to use its ore or iron in the manufacture of steel, making but little steel herself, because it was found more profitable to sell the iron than to make steel which, on account of the limited supply of fuel, would compete unfavorably in price with the steel of other countries. But Sweden is now beginning to exploit her products of steel in countries hitherto untouched. She has found a large market in America. He then made the following statement:

"One of the greatest disadvantages of using Swedish steel in America has been the difficulty of getting large quantities of steel from that country in a hurry, on account of the unfavorable transport facilities. The steel from Sweden has to be shipped to some foreign port from where it is forwarded to American ports. It will be readily seen that manufacturers requiring large quantities of steel for immediate use cannot afford to wait two or three months to get the steel which, they may be convinced, is the best for their purpose. One of the officers of a manufacturing firm of national reputation, a short time ago, at a discussion for the adoption of Swedish steel in the factory, made the following remark:

"You know what it means to buy imported steels, and you know what happens when you are held up three or four months because they run short of a certain size of steel. If you can get nearly as good results from some steel you can depend upon obtaining when you want it, buy that particular steel, but don't get tied up with a source of supply 3000 or 4000 miles away and lose business because you cannot build machinery."

"But in America we have progressive men whose minds are capable of undertaking daring enterprises, and a company has been formed which carries, in the port of New York, a stock of 4000 tons of Swedish steel ready for shipment at any moment. None will deny that this, perhaps, is the largest stock carried by any individual firm in any part of the world. In this way one of the chief objections against Swedish steel in America has been removed."

### The Sherman Law

#### Unfamiliar Text of the Anti-Trust Statute

Much as has been written about the Sherman law and as familiar as the average reader is with the purport of its provisions, probably few laymen have ever read it. Albert H. Walker, the New York attorney who is the author of "The History of the Sherman Law," suggests that the newspapers can throw more light upon the subject to which it relates by printing the statute itself than in any other way. As the readers of *The Iron Age* have had occasion, and will have, to think much of the practical effect on business of the enforcement of this law, we present its full text below. Its brevity will be seen to be in inverse ratio to the importance it has assumed as a factor in the business world:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

Section 1—Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations, is hereby declared to be illegal. Every person who shall make any such contract, or engage in any such combination or conspiracy, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine not exceeding \$5,000, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

Section 2—Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons to monopolize any part of

the trade or commerce among the several states, or with foreign nations, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding \$5,000, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

Section 3—Every contract, combination in form of trust or otherwise, or conspiracy, in restraint of trade or commerce in any territory of the United States, or the District of Columbia, or in restraint of trade or commerce between any such territory and another, or between any such territory or territories and state or states or the District of Columbia, or with foreign nations, or between the District of Columbia and any state or states or foreign nations, is hereby declared illegal. Every person who shall make any such contract or engage in any such combination or conspiracy, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding \$5,000, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

Section 4—The several Circuit Courts of the United States are hereby invested with jurisdiction to prevent and restrain violations of this act; and it shall be the duty of the several district attorneys of the United States, in their respective districts, under the direction of the Attorney General, to institute proceedings in equity to prevent and restrain such violations. Such proceedings may be by way of petition setting forth the case and praying that such violation shall be enjoined or otherwise prohibited. When the parties complained of shall have been duly notified of such petition the court shall proceed, as soon as may be, to the hearing and determination of the case; and pending such petition and before final decree, the court may at any time make such temporary restraining order or prohibition as shall be deemed just in the premises.

Section 5—Whenever it shall appear to the court before which any proceeding under section 4 of this act may be pending, that the ends of justice require that other parties should be brought before the court, the court may cause them to be summoned, whether they reside in the district in which the court is held or not; and subpoenas to that end may be served in any district by the marshal thereof.

Section 6—Any property owned under any contract or by any combination, or pursuant to any conspiracy (and being the subject thereof) mentioned in section 1 of this act, and being in the course of transportation from one state to another, or to a foreign country, shall be forfeited to the United States, and may be seized and condemned by like proceedings as those provided by law for the forfeiture, seizure and condemnation of property imported into the United States contrary to law.

Section 7—Any person who shall be injured in his business or property by any other person or corporation by reason of anything forbidden or declared to be unlawful by this act may sue therefor in any Circuit Court of the United States in the district in which the defendant resides or is found, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the costs of suit, including a reasonable attorney's fee.

Section 8—That the word "person" or "persons" wherever used in this act shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, the laws of any of the territories, the laws of any state or the laws of any foreign country.

Approved July 2, 1890.

**Committee on Steel Works Labor Conditions.**—Chairman Gary of the United States Steel Corporation has announced in the past week the names of the committee provided for at the last annual meeting of the corporation to investigate labor conditions in the steel industry. Stuyvesant Fish, formerly president of the Illinois Central Railroad, is chairman of the committee, and the other members are T. De Witt Cuyler, Darius Miller, Charles L. Taylor and Charles A. Painter. Mr. Cuyler is a director in the Atchison, Pennsylvania and New Haven railroads. Mr. Miller is president of the Burlington. Mr. Taylor was formerly a partner in the Carnegie Steel Company and for a number of years has been one of the trustees of Andrew Carnegie's pension and benefit funds. Mr. Painter is a Pittsburgh banker. The committee will take up its work at once and sessions will be held in New York, Pittsburgh, and possibly at other places. The announcement of the personnel of the committee was delayed because some of those whom Chairman Gary asked to serve were unable to do so.

## The Problem of the Trusts \*

BY RICHARD OLNEY†

It is axiomatic that the law invariably lags behind the conditions and needs of progressive communities. Nothing more strikingly illustrates the rule than what has taken place in this country in respect to what are called the trusts. Under the statute of 1890 trusts, big and little, were outlawed. The executive department was required to exterminate them through the courts, their promoters and officers were put in the criminal class, and all persons injured by their operation were given claims for damages.

What has been the result of this 20 years' war upon the trusts—a war waged with the emphatic approval of the general public? So far from being eliminated, they have persistently grown in number and scope, and, economically speaking, have vindicated their economic right to exist and to stay.

Even the most ardent and eminent trust busters—among whom can be included an ex-President—have begun to perceive that the trusts are only a phase of financial development, and to realize that the relentless and indiscriminate assaults upon them are a serious menace to the country's commercial development and progress.

Even the United States Supreme Court shows the influence of the spreading of the reaction in favor of big business, and, recalling its original decision against it, now holds that there are good trusts and bad trusts, and that it is for it to determine which are good and which are bad—which shall live and which shall perish.

### The Crucial Question

The Supreme Court is, of course, to be credited with good intentions, and by its latest decision in the trust cases unquestionably meant to come to the relief of the business of the country. But the crucial question is, Has it done so? In recanting and denying all combinations restraining trade in any degree to be unlawful, has it cleared up the situation or made confusion worse confounded?

The situation it dealt with was one in which the law was clear, but its enforcement so impracticable and repugnant to common sense that, as a rule, business thrived, or at least got along somehow by evading or defying the law at the practical connivance of its officers.

The situation the court has substituted is one in which the law is no longer clear—in which combinations must be adjudicated legal before there can be certainty as to the lawfulness of their organization of large enterprises; must always be effectually discouraged and repressed by the menace of litigation over their reasonableness with all the amending and inevitable uncertainties.

It will be conceded that big business is with us to stay. The financial chaos, the industrial and commercial stagnation and disaster that must ensue from reversion to the day of small things—to railroads 40 or 50 miles long, to factories and farms dependent for their operation upon the resources of some one individual, to independence and isolation among the captains of industry in place of interdependence and co-operation—are too glaring and too appalling to be welcomed by the sturdiest enemy of the present order of things.

Surely, if before the latest trust decisions big business was handicapped because it knew it to be carried on against the law, it is now none the less severely handicapped because, until the court gives it its benediction, it can never know whether its status is legal or illegal.

What business most craves of all things, however, is certainty, and certainty before it embarks upon an enterprise, and not merely afterward.

It cannot be gainsaid that large combinations of capital, for the financing of which every case must be a law unto itself and unto itself alone, and in which reasonableness, the supreme test of the validity of combinations and of the non-guiltiness of the combiners is a highly fluctuating factor, necessarily varying with the kind of business, with the time and place where carried on, with the indispensableness of the business in its relation to other businesses and the general welfare, with the extent of domestic and

\*From the New York Times, October 28, 1911.

†Secretary of State in President Cleveland's Second Administration.

foreign competition, and with a multitude of other circumstances, chief among which will always be found to be the length of the Chancellor's foot.

### The Supreme Court's Burden

If big business is to continue, though, as also the relations to it of the national judiciary, as defined in the latest trust decision, the result is that the national Supreme Court has taken upon itself practical charge of the business of the country. Nine-tenths of it will be done by the combinations, which will effectually control the other one-tenth, and the existence, character and proceedings of all will be dependent upon edicts of the Supreme Court. Was ever a country's judiciary in that position before?

Two things, it is believed, may be confidently asserted. In point of law the present position of the court is not tenable unless the constitution is to be regarded as obsolete and the national judiciary has become clothed with legislative and administrative as well as judicial functions.

In point of fact, the task of supervising the business combinations of 90,000,000 people, of passing judgment upon the reasonableness of the innumerable partnerships, firms, associations and corporations by which that business is done, is a task incapable of real performance by the national courts, because reasonableness is never the same in two cases, but in each must be separately investigated and determined.

Did the rule justify or call for any such application? Did it authorize or require the court to evolve out of its own inner consciousness a standard by which the reasonableness of business corporations should be determined?

### The Supreme Court and the Constitution

In undertaking to settle such a standard without any guidance or clew from Congress as to the elements or requirements of the public policy involved did not the Supreme Court trespass upon a field committed by the constitution to the possession of Congress exclusively? And did not the rule of reason demand that the court should hold the statute to be altogether and incurably defective on the court's first version of it for the reasons the court set forth and on the second and only alternative version because that would enable and require the court to make its views of public policy the law of the land instead of the view of Congress?

These are the questions now being put by statesmen and lawyers and captains of industry and being more and more uniformly answered in the affirmative.

It is being more and more completely and generally realized that only the legislative department of the National Government is competent to determine what business combinations should or should not be permitted to carry on interstate and foreign trade, and that the question of public policy involved is not for the national judiciary, either as qualified by having power over the subject matter or as well fitted to make such pertinent investigations and obtain such pertinent data as are easily made by and easily accessible to Congress and its committees.

Lawyers in particular are impressed with the unfortunate consequences to the national courts likely to ensue from their undertaking the duties required of them by the late decisions of the trust cases. It is only too true that no uniform rule touching the reasonableness of the business combinations is likely to be found in the decisions of the various national courts of the country, that reasonableness in one district is likely to wear a wholly different aspect from reasonableness in another, that in the nature of things no consistent principle covering all such cases can be formulated by the Supreme Court, and that the result to be expected is not merely confusion and perplexity in business circles but great loss of prestige by the national judiciary.

### Restraint of Trade

What must happen, perhaps, will be better realized if we assume the doctrine laid down in the recent trust cases to apply to restraints of trade other than those arising from business combinations.

Duties on imports, for instance, operate to restrain trade in the most effective manner. Suppose Congress, after giving a list of dutiable articles, should enact that the rate of duty in each case should be a reasonable rate as determined by the national courts, or should be a fixed rate, or such other rate as the courts might find reason-

able. The result would be that a crowd of tariff cases would be likely to occupy those courts to the exclusion or detriment of all other cases and to produce such a congestion of business as to practically stop the wheels of justice.

Similar results are to be expected from the national courts undertaking to sit in judgment upon the reasonableness of all business combinations. Not only are the suits likely to be as numerous as they would be if the courts were to attempt to make reasonable tariff schedules; they necessitate investigations of a great variety of subjects, each requiring the ascertainment and analysis of masses of facts and the weighing of a great body of conflicting expert opinions.

By the way of illustration there could be nothing better than what the Tobacco and Oil cases have furnished.

The record in each is enormous. There are volumes of evidence, and the rise, progress and development of each industry to date are set forth at full length with all accompanying facts respecting foreign and domestic markets and foreign and domestic consumption and competition.

When it is remembered that every industry of the country and every business combination carrying it on may be subjected to the same ordeal, the wonder will be not that the mills of the national judiciary grind slowly, but that they do not cease grinding altogether.

### The Supreme Court Made No New Rule

When the decision in the trust cases was first announced there was a general sigh of relief on the part of the American business world. Lawyers, statesmen and captains of industry joined in the chorus of praise for the judgment of the court. They were seemingly captivated by what struck them, or what they chose to treat, as a new discovery—namely, the existence of a rule of reason in accordance with which the courts discharged their functions.

They did not know, or ignored the fact, that there was nothing new about the rule; that the Supreme Court had not invented it for use in the trust cases, and that English jurists and English courts had acted upon it for centuries to the great advantage both of society at large and of the law itself.

Of late, however, praise of the court and of its adjudication have rather abruptly ceased and have given place to general skepticism, not as to the existence of the rule of reason and its value, but as to the justness of the application of the rule.

### The President's Former Position

President Taft in his present record traveling and speechifying trip is vigorously lauding the Supreme Court's changed attitude on the trust question, and is vigorously assailing the views and motives of its critics. But it is clear that he once deprecated any such change, and was particularly alarmed by its probable effects upon the prestige and usefulness of the court.

In a special message to Congress in January, 1910, noticing the contention that "reasonable" should be a part of the statute, and that it should be left to the court to say what is a reasonable restraint of trade and what is a reasonable monopoly, he used this language:

I venture to think that this is to put into the hands of the court a power impossible to exercise on any consistent principle which will insure the uniformity of decision essential to just judgment. It is to thrust upon the courts a burden that they have no precedents to enable them to carry and to give them a power approaching the arbitrary, the abuse of which might involve our whole judicial system in disaster.

It is quite impossible to believe that the law respecting big business will permanently stay in the condition in which the latest trust decisions of the court have landed it. Congress, and Congress alone, can effectually and permanently lift business out of the slough of despond in which it is now plunged.

It is its plain duty to vindicate its jurisdiction over the subject matter—to get all possible light upon it by proper investigations and by study of the experience of other countries; and, being thus informed and guided, to determine what are the conditions under which big business can be and ought to be carried on without loss of its advantages, but with practical elimination of possible dangers to the public welfare.

# Taxable Valuation of Michigan Iron Mines

The Methods Followed in Making 400 Per Cent Increases—Profits Were Not Large, Yet They Were Realized in the Best Five Years the Iron Trade Has Known

BY DWIGHT E. WOODBRIDGE

Acting in general accord with a recent investigation conducted by J. R. Finlay, the State Tax Commission of Michigan has increased the taxable valuation of iron mines in the counties of Gogebic, Marquette, Dickinson and Iron—the entire Michigan part of the Lake Superior iron mining region—from \$19,626,000, which was the return of the local assessors, to \$85,637,500. This latter figure compares with the estimate of \$119,500,000 which was given by Mr. Finlay as the total worth of these mines. As a result the iron mines will bear practically all the cost of maintenance of government in the respective communities where they are represented. At Negaunee, for example, the remainder of the city property will pay but 20 per cent. of the total sums raised by taxation.

## High Valuations and Low Tax Rate

It is contended by members of the State Commission that it is their duty to assess all properties at actual cash value, meaning what the lands will sell for, and they did not believe that mines which, according to the statement of Mr. Finlay, had earned net some \$57,000,000 in the past five years, were assessed too high at \$85,000,000. They admit that the mines are now assessed at a higher rate than that applying to other properties, and expect to equalize this by raising other properties, which will reduce the share of taxes now to be paid by the mines. If everything is equally assessed, either at 33 or 66 per cent. or on some other basis, the result in collections will be the same. But if one class of property is assessed according to the law and other classes or other portions of the commonwealth at reduced rates, there is injustice.

One point is generally overlooked in this question of taxation; that is, that the amount to be raised for all purposes, local, municipal and State, is theoretically fixed and stationary, and if the valuation is high the rate will be low, and vice versa. Applying this to the mining districts of northern Michigan, it means that for all purposes, other than the trifling proportion of the total raised that is paid over to the State for general State expenses, the mining companies should pay little more on a high valuation than on a low one. Practically, there are two objections to this view. One is that while mining properties may be assessed at full value the property of the individual taxpayer is passed over more lightly, and he does not stand his due share. That the State Commission recognizes this fact is shown by its statement that other properties will probably be equalized somewhat. The other objection is that with a low tax rate and an opportunity to collect more money, the authorities usually succumb to the temptation to carry out improvements that may not be necessary, and that they could not initiate were the valuation less and the rate higher. This tends to force the mining companies to go into local politics for self-protection—something they should not be compelled to do.

## The Minnesota Tax Commission's Method

For the past four years the State Tax Commission of Minnesota has controlled the taxation of all State properties, including the iron mines of the Mesaba, Vermilion and other districts. This commission is a permanent court, in continuous session, is the State board of equalization, and has complete powers covering all matters of taxation. It has spent much time in the consideration of mine taxation, and has scientifically evolved a method of mine tax valuation that, when introduced, was a rather radical departure; that is the plan of placing an ad valorem value and of taxing iron ore in the ground and by the ton. Recognizing the infinite variety of conditions covering mines, especially when some of them are open pit and some very deep, some of unprecedented tonnage and others quite small, with every variety of hematite ore, grading

from the purest known to material that could only be utilized under exceptional conditions, the commission set up a system of classification comprising six varieties, and assessed active mine, reserves and sub-reserves under each, making in reality a total of 18 classes. The largest, highest grade and cheapest mined ore bodies paid in 1910 a tax upon a valuation of a trifle under 35 cents a ton; the lowest grade of reserves had a valuation of 8 cents a ton.

## Michigan Valuation Increased 400 Per Cent

The Michigan Tax Commission, upon an investigation carried out as thoroughly as possible by Mr. Finlay and his associates, and upon its own cursory review of that investigation, has placed upon Michigan iron mines a valuation running up to more than 60 cents a ton, not alone on the amount of ore in sight, but also on that which is classed by Mr. Finlay as probable; that is, which may subsequently be found beneath the present bottoms of the mines and which is beyond any exploration or drilling that has been done. By so doing it has increased the taxable value of these mines by more than 400 per cent. A tabular statement of the valuations returned by the assessors and that fixed by the board will be of interest and follows:

	Assessed Value.	State Comn. Value.
<b>Gogebic County:</b>		
Oliver Iron Mining Company:		
at Wakefield .....	\$15,000	\$67,500
at Ironwood .....	1,800,900	14,591,000
at Bessemer .....	230,720	200,000
Newport Mining Company:		
at Bessemer .....	75,000	398,700
at Ironwood .....	1,471,061	8,535,000
at Erwin .....	120,000	610,000
Corrigan, McKinney & Co., at Bessemer....	467,971	954,500
Brotherton Mining Co., at Wakefield.....	100,000	954,000
Sunday Lake Iron Co., at Wakefield.....	65,000	1,071,000
Verona Mining Co., at Wakefield.....	50,000	135,000
Keweenaw Assn., at Bessemer.....	165,000	234,000
Cleveland Cliffs Iron Co., at Ironwood....	153,452	162,000
Ashland Iron Co., at Bessemer.....	277,054	432,000
<b>Total .....</b>	<b>\$4,913,158</b>	<b>\$28,343,100</b>
<b>Dickinson County:</b>		
Oliver Iron Mining Company:		
at Iron Mountain .....	\$2,015,000	\$4,988,000
at Norway .....	261,000	578,000
Penn Iron Mining Company, at Norway.....	586,700	1,200,000
Dessau Mining Company, at Iron Mountain	30,000	56,000
Pewabic Mining Company, at Iron Mountain	745,000	300,000
Monroe Mining Company, at Norway.....	12,000	20,000
Verona Mining Company, at Breitung.....	34,000	20,000
Loretto Mining Company, at Waucedah....	52,500	269,000
Mineral Mining Company, at Waucedah....	1,500	16,500
<b>Total.....</b>	<b>\$3,738,300</b>	<b>\$7,447,500</b>
<b>Iron County:</b>		
Corrigan, McKinney & Co.:		
at Bates.....	\$10,000	\$121,500
at Stambaugh .....	45,000	704,000
at Crystal Falls .....	311,500	1,919,600
at Mastodon .....	40,000	108,000
Oliver Iron Mining Company:		
at Stambaugh .....	110,000	632,000
at Hematite .....	27,000	63,000
at Mansfield .....	80,000	216,000
Munro Iron Mining Company:		
at Bates .....	25,000	471,600
at Stambaugh .....	84,500	127,000
Verona Mining Company:		
at Stambaugh .....	536,000	6,469,000
at Hematite .....	1,000	30,000
Bates Iron Company, at Bates.....	3,600	45,000
Davidson Ore Company, at Iron River.....	20,000	346,000
Mineral Mining Company, at Iron River...	90,000	675,200
Jones & Laughlins, at Iron River.....	300	450,000
Niagara Iron Mining Company, at Iron River .....	20,000	195,000
Huron Iron Mining Company, at Stambaugh	86,000	375,000
Spring Valley Iron Company, at Stambaugh	60,000	481,000
Brule Mining Company, at Stambaugh.....	98,500	261,000
F. I. Carpenter, at Crystal Falls.....	1,350	50,000
Crystal Falls Iron Mining Company, at Crystal Falls .....	45,000	75,000
Neeley Exploration, at Crystal Falls.....	750	25,000
Amasa Porter Exploration, at Crystal Falls.	500	45,000
Hemlock River Company, at Hematite.....	68,000	68,000
Bristol Mining Company, at Crystal Falls..	143,750	865,000
Illinois Steel Company, at Crystal Falls....	87,500	150,000
Cleveland-Cliffs Iron Company, at Bates....	200	81,000
<b>Total.....</b>	<b>\$1,993,500</b>	<b>\$15,046,900</b>

	Assessed Value.	State Comn. Value.
Marquette County:		
Cleveland Cliffs Iron Company:		
at Ishpeming	\$1,976,000	\$6,490,500
at Negaunee	1,633,950	11,179,000
at Forsyth	504,100	2,039,000
at Ely	50,000	90,000
Oliver Iron Mining Company:		
at Ishpeming	600,000	4,050,000
at Negaunee	704,500	1,218,000
at Tilden	25,000	110,500
Jones & Laughlins:		
at Ishpeming	835,000	994,000
at Negaunee	200,000	900,000
at Tilden	8,000	10,000
Breitung Interests, at Negaunee	730,500	2,973,000
Republic Iron & Steel Company, at Negaunee	408,000	585,000
Winthrop Iron Company, at Tilden	310,000	1,870,000
Richmond Iron Company, at Richmond	15,000	179,000
Oliver Iron Mining Company, at Champion	300,000	652,000
Republic Iron Company, at Republic	351,000	942,000
Am-Boston Iron Company, at Ely	150,000	115,000
Excelsior Iron Company, at Ely	150,000	402,000
Total	\$8,951,050	\$34,800,000

It must be admitted that gross inequalities existed in an assessment that permitted one property to be increased 400 fold, while it reduced another. Many of the larger mines are increased tenfold. It is not improbable that serious efforts will be made to overturn the final figures of the State Tax Commission, and to bring in a valuation more closely approximating the opinions of mining men interested. Unless there is a decided advance in the valuations placed by the State on other classes of property this is reasonably sure to take the form of efforts at law.

#### Cost and Profits of Michigan Iron Ore

In this connection a summary of some of the figures in the extensive report of Mr. Finlay will be of general interest to mining men. The figures of costs and probable profits are of special importance. For purposes of comparison Mr. Finlay divided the iron ores of Michigan, not into ranges as they are geographically separated, but into classification by groups, based on essential uniformity of geological occurrence, which occurrence is the basis of and determines economical factors of costs and value. These groups are: First, the Gogebic range as a whole; second, what is known as the Iron River region, a part of the Menominee range; third, the Crystal Falls section; fourth, the Menominee district at and near Iron Mountain; fifth, the western Marquette range, Baraga County and vicinity; sixth, hard ore mines in and near Ishpeming and Negaunee; seventh, soft ore mines of the same region; eighth, the Swanzy district, Marquette range; ninth, various siliceous and other mines producing low grade ores and operating occasionally.

The following tables, based on returns for five years, give essential information as to these groups, and, while not precisely comparable on account of variations of accounting methods, are near enough to serve as a most interesting comparison:

Summary of Figures in the Report on Michigan Iron Mines.

Groups.	1	2	3	4	5	6	7	8	9
No. mines reported.....	20	29	25	12	3	11	20	13	11
Tons shipped.....	54,480	6,160	13,000	41,600	1,180	46,000	35,000	2,400	1,200
Demonstrated reserves*	28,400	20,500	2,570	9,000	1,860	11,000	36,000	6,900	1,300
Probable extensions below bottoms*	18,000	45,000	7,000	9,000	200	21,700	17,000	4,100	none
Total mine cost per ton (items below).....	\$1.72	\$2.28	\$1.28	\$1.42	\$1.56	\$2.10	\$1.64	\$1.81	\$0.93
General exp., excl. taxes.....	.10	.09	.06	.10	.07	.14	.12	.08	.04
Const., devel. and explor.....	.27	.89	.26	.19	.21	.29	.19	.15	.22
Mining.....	1.35	1.30	.96	1.13	1.28	1.67	1.33	1.58	.66
Cost, f.o.b., Lake Erie.....	2.88	3.29	2.34	2.48	2.58	3.12	2.62	2.78	2.02
Av. expected value, per year.....	4.22	3.23	3.52	3.46	2.98	4.30	3.77	3.60	↑
Expected cost per year.....	2.87	2.63	2.36	2.64	2.61	3.32	2.69	2.94	↑
Expected profit per year.....	1.35	.58	1.16	.82	.37	.98	1.08	.66	↑
Expected tonnage per year*	2,875	1,290	880	1,540	75	1,224	2,363	456	↑

\*In thousands.

†No expectations given.

#### The Smallness of Profits

The one startling fact that shows throughout this table is the slight annual profit per ton, averaging but 86.5 cents for the Michigan region, considered in connection with the tonnage mined from each group. That this small profit has been secured in the five years admittedly more profitable than any similar period for a generation, only adds to the significance of the figures. In the face of this showing one will scarcely contend that mining companies are earning an exorbitant and extravagant profit. These figures of Mr. Finlay's thus analyzed, seem to indicate that the State Tax Commission was unjust in raising the tax value so sharply.

#### Mining Companies Not Tax Dodgers

If the mining companies of Michigan were as a rule tax dodgers, or if they were not continually taking

thought of the communities in which they operate, to the improvement of those communities, if they were not steadily paying out large sums for the betterment of the towns—sums that should rightly be paid by general taxation—the feeling that they are being unjustly dealt with would not be quite so strong or so general. But of all the mining enterprises in the United States the iron and copper companies of Michigan, Minnesota and Wisconsin stand, if not pre-eminent, then in the very front rank of those whose care for their employees and whose interest in the communities in which they are located, is dictated by a higher policy than that of mere selfish business interests, however broadly one may construe the term business interest.

#### A Better Feeling Toward Railroads

Reports to the Railway Business Association, 2 Rector street, New York, from the 40 states whose legislatures met in 1911 show that a marked tendency, already widespread, has developed in the direction of a constructive policy affecting railroads, and in many instances affecting industry and business as well. The year's record is set forth in the association's Bulletin No. 9. President George A. Post says the association deems it "of high value that the experience of states long given to much regulation and now turning to a period of legislative rest should be made known in the language of the representatives of those states to their fellow-citizens throughout the nation." The Bulletin says that a number of states not hitherto active in adopting railroad restrictions enacted this year regulatory statutes, but viewing the whole country the most far-reaching tendency is a diminution or complete cessation of law-making affecting the carriers. No less than 24 states passed little or nothing. "Most striking of all, the states which have been pioneers in regulation and have up to a recent period done most in that direction seem to have nearly or quite given up the quest for further restrictions, and are now evincing anxiety to attract capital for the development of transportation and business." A constructive policy was urged by Governors whose messages are quoted at length in the text of the Bulletin, which consists of 32 pages.

Riggs, Distler & Stringer, Inc., 7 East German street, Baltimore, Md., have been awarded the contract for installing the heating and other apparatus for the new tower building of the Maryland Casualty Company. They are just beginning the work on their contract for the Springfield State Hospital, Sykesville, Md., to install one 75-kw., one 125-kw. and one 150-kw. Ames engines directly connected to three Fort Wayne generators of the same capacity.

city; also two 400-hp. Edge Moor boilers with Wetzel stokers, together with pump, accumulator, piping and other accessories for the complete power plant and the tunnel work for the heating distribution system. The amount of this contract is \$60,000. Their work on the Homewood and Latrobe apartment houses and Maryland Asylum and Training School for the Feeble Minded is nearing completion.

The M. Rumely Company, La Porte, Ind., is about to purchase for cash the assets and other property of the Advance Thresher Company, Battle Creek, Mich., and the Gaar-Scott Company, Richmond, Ind., for the purpose of rounding out its own line. Rapidly increasing sales of Oil-Pull engines have created a demand for other power-driven machinery.

# Heavy German Tools for Turbine Building

Experience in Equipping Ordnance Works Applied to a New Industrial Field and Its Suggestions to American Tool Builders

BY C. A. TUPPER, MILWAUKEE

In the writer's recent tour of European shops one of the most interesting of the observations made—and one pregnant with suggestion for machinery manufacturers in this country—concerned the influence upon machine-tool construction of the enormous development abroad in the building of steam turbines, particularly marine turbines. At the outset, the work of machining turbine parts for the small units then placed in service offered no especial difficulties, and ordinary tools were used; but with the rapidly increasing dimensions of shafts, rotors, cylinders and outercasings it became necessary to build lathes, boring mills, etc., of corresponding capacity.

At the present time such concerns on the Continent as the Turbinia Deutsche Parsons Marine Aktien-Gesellschaft and the Allgemeine Elektrizitäts Gesellschaft, Berlin; Gutehoffnungshütte, Oberhausen; J. A. Maffei, München-Hirschau; Sächsische Maschinenfabrik, Chemnitz; Maschinenfabrik Augsburg-Nürnberg, Nuremberg; F. Schichau, Elbing; Brown-Boveri & Cie., Baden and Mannheim; Escher-Wyss & Cie., Zurich and Ravensburg; Maschinenfabrik Oerlikon, Zurich; Franco Tosi, Legnano; Elektrizitäts und Maschinenbau Akt. Ges., Prague; Erste Brünnner Maschinen-Fabriks Ges., Brünn, and the Österreichische Dampf-Turbinen Ges., Vienna, have installations for turbine construction which, in many of their details, rival the equipment in the great Krupp shops at Essen for the manufacture of heavy armor plate and ordnance.

German tool builders, having followed very closely the development of this new industry, were the first to take advantage of the opportunities thus afforded, and their continued specialization in this line, as contrasted with the relatively slower progress made in most other fields of machine-tool production, has attained unusual proportions.

Among the leaders in responding to the demand for

tools to be used in heavy turbine work has been the Ernst Schiess Werkzeugmaschinenfabrik Akt. Ges., at Düsseldorf, by whose courtesy the writer was enabled to obtain the accompanying illustrations. These are from photographs of installations made for turbine manufacturers in the list above mentioned.

## Some Gigantic Lathes

Fig. 1 shows a special lathe for turning the shafts and other rotating parts of large turbines. The distance between centers is 29 ft. 6 in. and the height of centers 5 ft. 4 in., giving a swing of 132 in. The swing over the carriage is 120 in. The face plate is 8 ft. 2 in. in diameter. As will be observed from the illustration, there is a massive double bed, which has a length of approximately 49 ft. and a width of 10 ft. 2 in. The bed has a continuous bearing surface and is provided with two carriages. These have both hand and power feed by means of the splined shaft, with cross-feed by screw. There is also a rapid-power traverse. The tail-stock has all of the characteristics and adjustments usual in large lathes. Each carriage carries the necessary mechanism for changing and reversing the feed. The near one also has a special arrangement for thread cutting, which can be done in lengths up to 32 in. There are four face-plate jaws. The main spindle, 16 in. in diameter, runs in adjustable bronze boxes and is driven from an Allgemeine 35-hp. motor at constant speed, which is 650 r.p.m. Twenty different speeds for cutting are obtained through gearing, which is readily manipulated by the operator. As a safeguard against overloading, the motor is provided with a slip coupling. All of the gears are made of special alloy steel and adjusted to insure long wear. The highest speed steel can be used with this lathe, and the work done is very

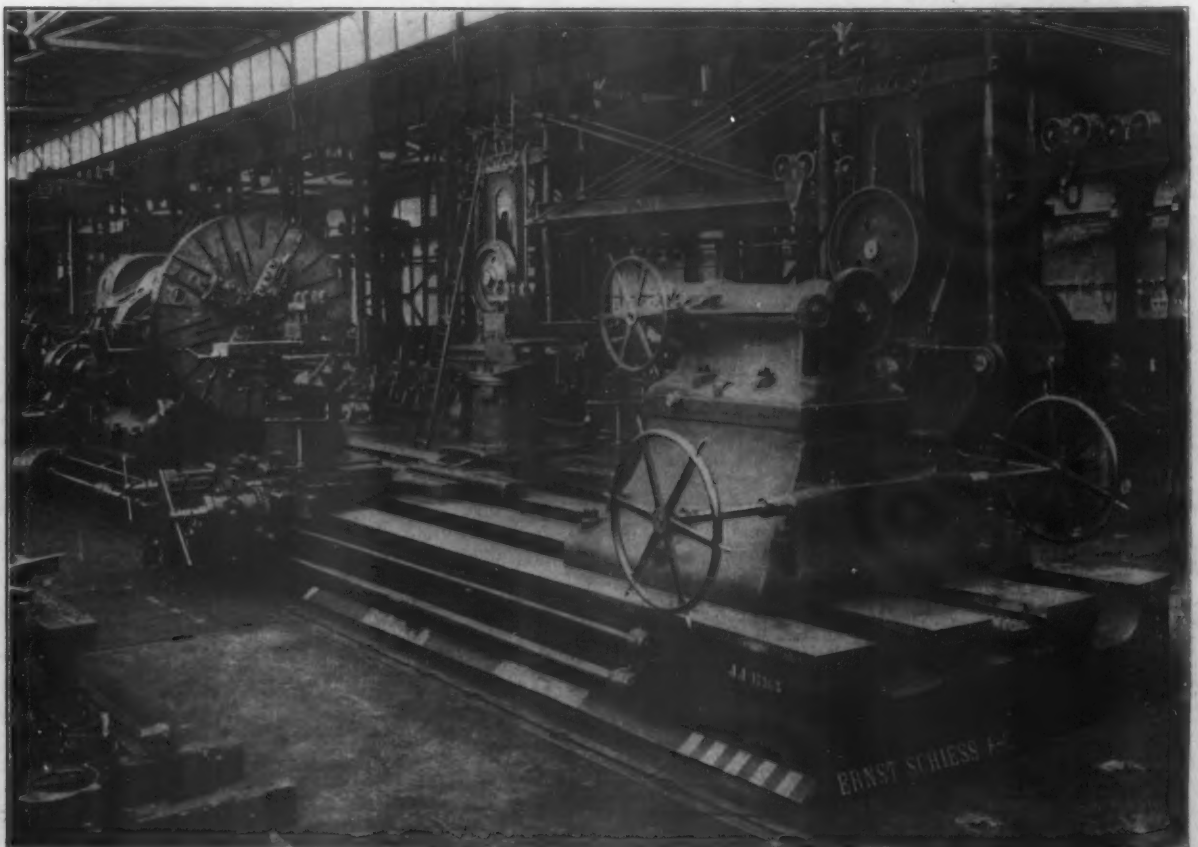


Fig. 1.—Lathe with 132-in. Swing and Weighing 209,437 lb., Built by the Ernst Schiess Werkzeugmaschinenfabrik.

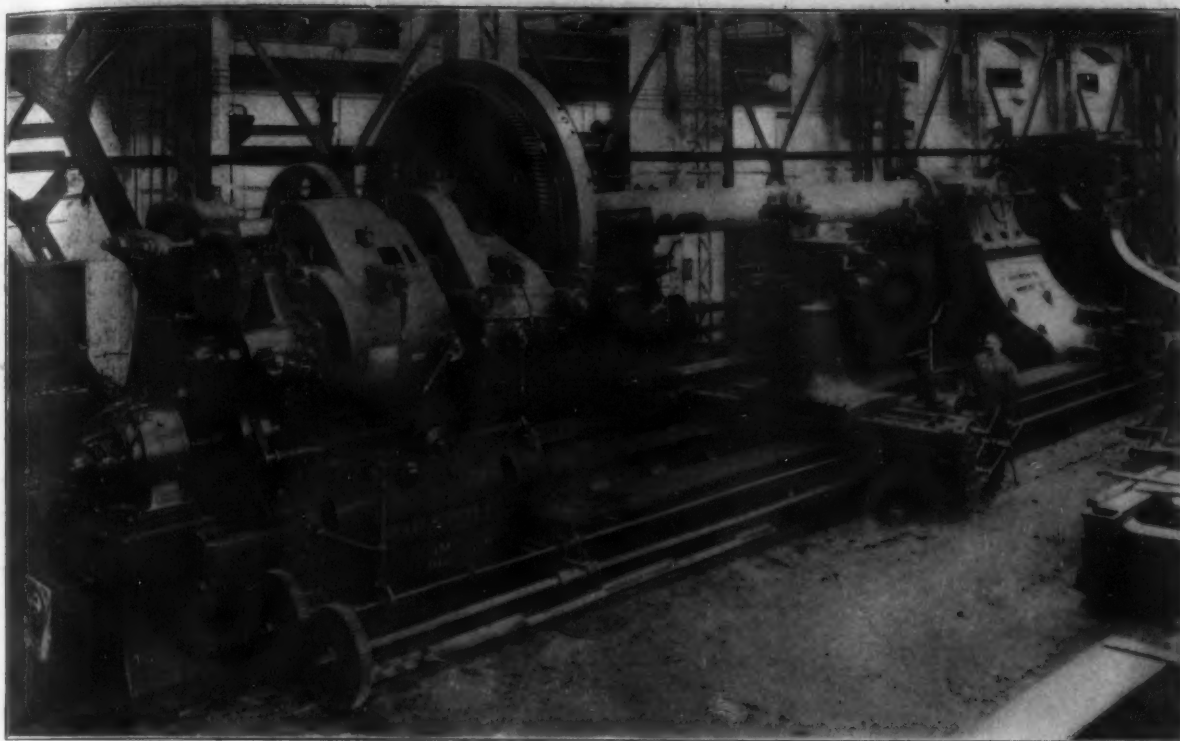


Fig. 2.—Lathe, 45 ft. 9 in. Between Centers and Weighing 418,874 lb. Adapted to Work 13 ft. 10 in. in Diameter

rapid for a machine so large in size. When fully fitted it weighs 209,437 lb.

In Fig. 2 may be seen a lathe similar to that shown by Fig. 1, but adapted to much larger work, up to 13 ft. 10 in. diameter. The height of the centers is 7 ft. 10 in. and the distance between centers 45 ft. 9 in. The bed is 67 ft. long and 15 ft. 1 in. wide. Threads up to 39-in. lengths can be cut. The face plate is 11 ft. 2 in. in diameter. This machine is driven from a Brown-Boveri constant-speed motor of 60 hp. The weight is 418,874 lb.

Fig. 3 shows a still larger lathe of the same general description, which will take turbine parts up to 18 ft. in diameter. Normally the swing is 190 in., but by means of enlarging pieces this can be increased to 228 in. The drive of the main spindle is through gearing from a 90-hp. Felten & Guillaume-Lahmeyerwerke motor for variable speed, permitting of 80 different speeds in combination.

The bed, 85 ft. by 18 ft. 4 in., carries five slide rests, which can be independently adjusted. Two of the three front rests are arranged for thread cutting by means of a lead screw placed between the ways. The weight of the lathe is 717,495 lb.

This line of large lathes, which shows progressive development in size, will give the reader an idea of the increasing requirements of turbine-building shops, and in the space allotted to the present article there will hardly be opportunity to show more than one additional illustration. Hence for Fig. 4 the writer has selected the horizontal boring and milling machine shown. The standard of this is carried on a bed 67 ft. 7 in. long and 6 ft. 7 in. wide. The boring bar, of 10 in. diameter, is adjustable in the direction of its axis, can be used either one way or the other and given 24 speeds. The vertical adjustment of the milling saddle is 11 ft. 6 in. This tool is used for

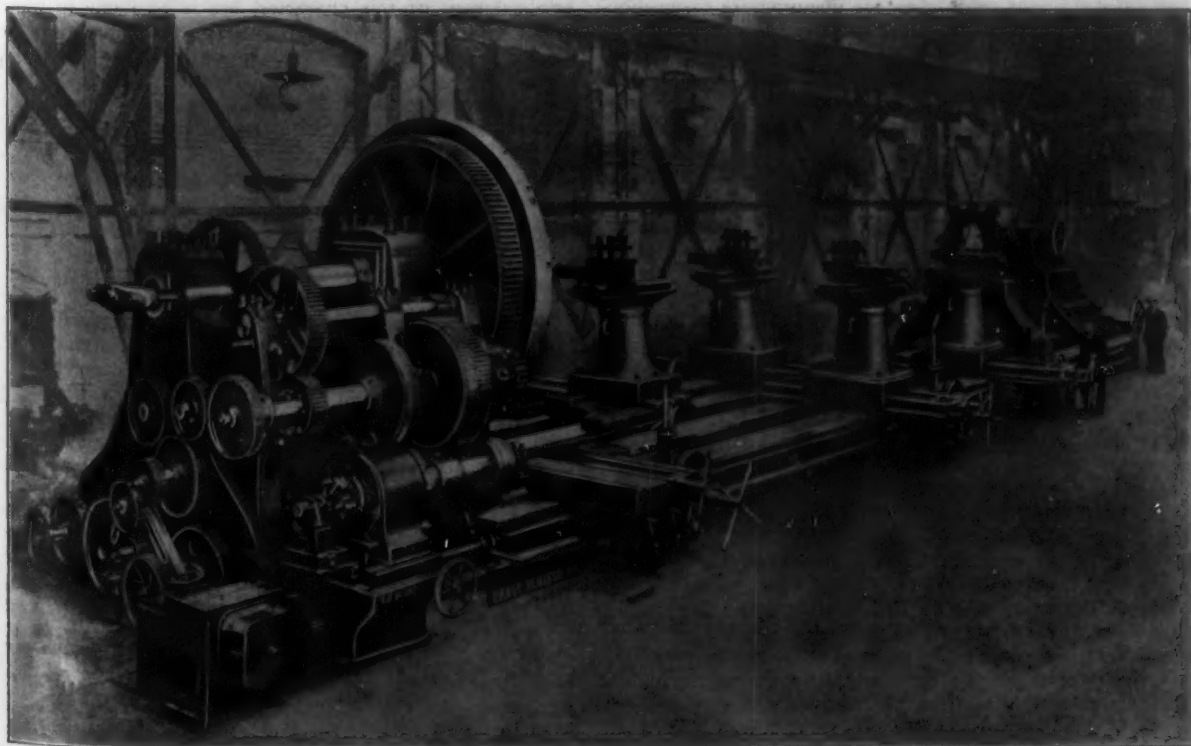


Fig. 3.—Lathe for Turbine Parts, 18 ft. in Diameter and Weighing 717,495 lb.

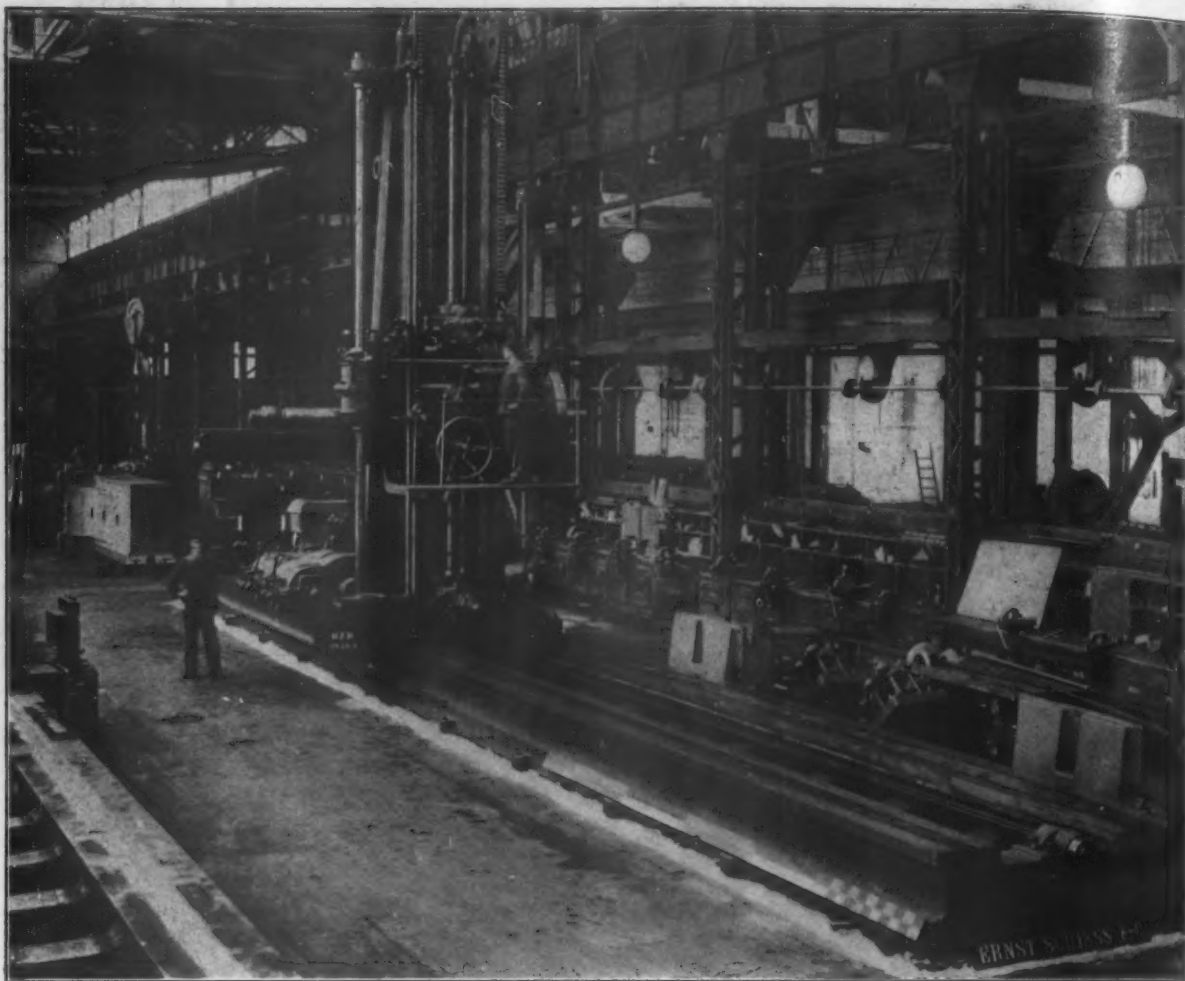


Fig. 4.—Horizontal Boring and Milling Machine with a 67 ft. 7 in. x 6 ft. 7 in. Bed.

boring and milling steam-turbine cylinders. It is driven from an Oerlikon induction motor, variation of speed being effected in the gear box.

#### Keeping Works Capacity Close to Developments

The works where these machines are built offer, in themselves, many features of interest to an American. They were established in 1866 by Dr. Ing. Ernst Schiess, and since the year 1869, when the manufacture of machine tools was first entered upon, they have built nearly 12,000. This, considering the fact that for many years past the machines have been largely of unusual size, is a remarkable achievement. Dr. Schiess and his associates have been "opportunists" in the highest sense of that word, and the course which they have taken to develop their business is, in many of its features, worthy of emulation by machine-tool manufacturers in this country. When the building of ironclad navies assumed large proportions, and heavy armor plates and guns began to be called for to provide the armament of both these and coast fortresses, Dr. Schiess kept pace with the requirements of the ordnance manufacturers, arsenals, shipyards, etc., until to-day his company is in a position to supply tools which will handle the largest, heaviest pieces. This experience was at once utilized when it became apparent that turbine building was tending towards sizes which would require similar equipment. A new line of machines has accordingly been developed, as illustrated in part herewith.

During the period mentioned Dr. Schiess has taken a very active interest in the commercial growth of the German Empire, including its merchant marine, and he has given particular attention to the extension of export trade, not merely what would have a direct effect upon his own business, but in its relation to the progress of the Empire as a whole. He bears the official title of Geheimer Kommerzienrat, or confidential counselor to the government in matters pertaining to commerce, and the writer understands that in this position he has rendered very efficient service. American manufacturers could well afford to devote some of their thought and energy in a similar manner to the general upbuilding of the trade of the country.

#### The Schiess Works at Düsseldorf

Although the Schiess works are located in the heart of Düsseldorf, close to the main railway station, where ground is very valuable, additions have had to be almost constantly in progress to provide the increased capacity needed, and the present area is about 14 acres, evenly divided between buildings and storage and switch yards. The pattern shop is unusually well equipped for a German establishment of this character, but is also one in which improved tools might be introduced to advantage from the United States and England. Some very large work is turned out here. The iron foundry, with cupola furnace, drying ovens, large molding machines and very efficient cleaning apparatus, presents an appearance of great activity for the space. Castings up to 50 or 60 tons are produced. The forging department has a full complement of steam hammers and auxiliary appliances.

In the machine shops there are upwards of 500 tools, some of them being very large in size. The lathe shown by Fig. 1 has, for example, been adapted, with some changes, to the requirements of the builder's own work, and advantage has been taken of every possible facility for finishing heavy parts at high speed. A special feature is made of prompt delivery. The assembling department is provided with a shop 512 ft. long and 65½ ft. wide, having a clearance of about 40 ft. beneath the cranes. Industrial tracks and a system of large and small cranes play, of course, a very important part in handling material, and in general the plant presents features similar to one of the same class in this country. There is a central power and compressor station, and all tools are driven either in groups or singly from electric motors, with the exception of pneumatic appliances. The generator station has a capacity of about 1000 kw. These shops contain a smaller percentage of American tools than most of the larger plants in the Düsseldorf district, due mainly to the fact that the company can supply such a variety of its own equipment. It is questionable, however, whether this has been to its advantage, for the benefit to be derived from the experience and specialization of others has thereby been lost.

The company's products, which include lathes, planers, shapers, slotters, drilling, boring and milling machines, punches and shears, bending and straightening rolls, cold and hot cutting saws, threaders and cutters, grinding machines, hydraulic and power presses, wheel-molding machines, and special equipment for iron and steel works, ordnance plants, gun shops, engine and turbine-building plants, boiler shops, iron and steel fabricating, steel-ship building, rolling and tube mills, locomotive, axle and wheel shops, electrical works, railroad shops, etc., bear the impress of the large and almost continuous orders turned out for the various Krupp plants, where probably a majority of the heaviest tools are of Schiess design. The influence of the new industrial development of Germany, including the requirements of steam and hydraulic turbine and gas-engine construction, as well as the growing opportunities for railroad and other government work, is leading tool designers into new fields which in time will be greater than the old. In its adaptation to these modern needs the Schiess organization is again playing the role of pioneer, just as in the case of armor plate and ordnance, and it represents to-day the independent order of German machine-tool building which, far from imitating American models, is making a distinct contribution to the world's progress in efficient methods of metal working.

The Wiener Machinery Company, 50 Church street, New York City, is the representative in the United States and Canada of the Ernst Schiess establishment.

### The Black Revolving Steam Feed

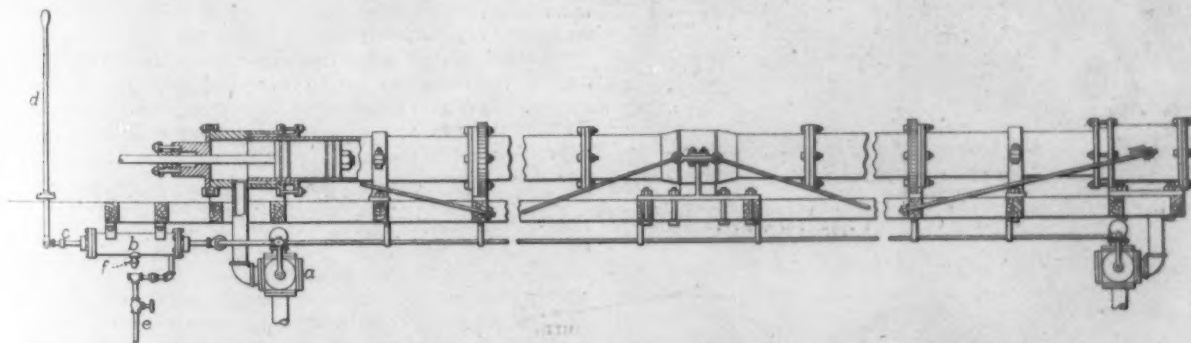
Under a patent recently granted to L. J. Black, the Beaumont Iron Works Company, Beaumont, Texas, is manufacturing a new type of revolving shot gun feed for steam saw mills. The special advantage claimed for this feed is that it is designed so that it can be turned at regular intervals, thus preventing the bottom of the gun from dragging out by the rod and head. This arrangement, it is pointed out, enables the user to keep the gun round and

either direction. The intermediate bearings are a loose rolling fit which permits the gun to expand from the center into the stuffing boxes on either end, thus caring for the expansion or contraction of the gun. Bearings are provided for each intermediate section so that there is a rest in the center of each section of the gun.

The gun is fitted with two gears, one near each end and bolted on the flange with the same bolts that hold the joints of the gun together. A small ratchet arrangement meshes with these gears and enables the gun to be turned sufficiently with one stroke of the lever to move the center enough to prevent the rod dragging in the same place.

The special type of valve controller known as the Martin valve controller is used with this feed. In installing this controller the steam feed valve *a* is placed on center and the controller *b* is conveniently located with reference to the steam line and in line with the rod *c* leading from the steam feed valves to the sawyer's lever *d*. The controller is then bolted securely to the timber and placed on center so that the stroke each way is divided in half. The stubs are attached to the pipe which makes the rod that pulls the steam feed valve and to the rod leading to the lever. In making this connection care must be taken that both steam feed valves and the controller are exactly on centers. The  $\frac{1}{2}$ -in. steam line *e* is connected to the controller by two  $\frac{1}{4}$ -in. pipe branches, and it is recommended by the builder that valves be placed in each connection close to the controller as well as a valve in the main steam line near the point where it branches. The  $\frac{3}{4}$ -in. pipe *f* is the exhaust and can be turned in the most convenient direction. This controller is so constructed that the mere moving of a piston inside of a larger valve causes the steam to work at either end of the cylinder, thus pulling the valves open and closing them at will. It is emphasized that the controller, which is in reality a little engine, is positive in action, and is so arranged that if the steam is shut off the operator still retains control of the steam-feed valves in the same way as is the case with the rig ordinarily used.

The steam-feed valves employed are of the rotary or rocking type and are so constructed that they can be used



The Black Revolving Steam Feed for Saw Mills Made by the Beaumont Iron Works, Beaumont, Texas.

have the rings fit at all times with a corresponding increase in efficiency due to the elimination of steam leakage past the piston.

These results are secured by a special design of stuffing box at each end of the gun, which is built upon the principle of the ordinary piston rod stuffing box. The two end sections of the gun have no flanges on one end and are turned on the outside for a distance of 18 in. from this point. The turned part is inserted in the stuffing box, which is fitted with a brass ring 6 in. wide and having room for four rings of  $\frac{3}{4}$ -in. packing and a gland. These sections at each end are bolted securely to the floor by four bolts in each side of the foot, which is 24 in. long. The general construction of the gun is the same as the older type, but in the center, one joint is cast with two bosses,  $1\frac{1}{2}$  in. high and 8 in. apart, around which are fitted clamps made in two sections with a foot 40 in. long, which is bolted to the timbers. The clamp is held together at the center by bolts and the special arrangement of the wrought-iron lugs to which are attached two rods running in each direction toward the ends of the gun and fastened to the timber on which it is mounted. The end stuffing boxes are anchored in the same way, each intermediate section of the gun having a 4-in. clamp which forms a cradle for it.

The center bearings or clamps have a machine fit between the bosses which takes up the thrust of the gun in

either in a single or a double valve as illustrated. It is claimed for this valve that there are no loose bolts, nuts or rings on the inside to get out of order or cause trouble; while in action the valve is quick and positive and will handle steam having a high percentage of moisture.

**Iron Ore Rates from Lower Lake Ports.**—A conference between representatives of railroads handling iron ore at Lake Erie ports and Commissioner Lane of the Interstate Commerce Commission was held at Washington last week. Commissioner Lane desired to discuss the different phases of ore handling from vessels to furnace yards and the conditions governing rates, so that uniform methods could be adopted which would be reasonable and legal. The practice of the railroads for a number of years of making rebates to shippers on ore loaded direct from vessels into cars, as distinguished from ore placed on dock, was gone into. The railroads explained that these rebates were open to all shippers and were a method of readjusting the freight charges of previous years which were found to be excessive. The question was raised whether any preferential rates were made in the form of prorating to terminal railroads. It was agreed that the railroads should appoint a committee to consider the questions involved and submit a plan that will properly meet the present situation.

## New Water Cooler

### Details of a Device Brought Out by the Power Specialty Company

For cooling circulating water for gas and oil engines, air compressors and steam and ammonia condensers; for treating air requiring heating, cooling, washing, humidifying or dehumidifying, and for concentrating liquid solutions of all kinds, the Power Specialty Company, 111 Broadway, New York, N. Y., has placed on the market the Power water cooler. The device can be located wherever desired, either in the engine room upon the floor or upon a shelf, or if there is no space available in the engine room, it can be placed in the basement or an adjoining room. When, however, the coolers are arranged for use in connection with an engine employing suction gas it is especially desirable that they be located in the engine room and arranged to thoroughly ventilate it on account of the poisonous properties of the fuel. Views of the cooler from the driving and the discharge ends are given in Figs. 1 and 2 respectively, while Fig. 3 illustrates a typical installation.

As will be noticed from Figs. 1 and 2, the cooler consists of a horizontal, cylindrical chamber or casing through which air is passed, a rotor within the chamber forming

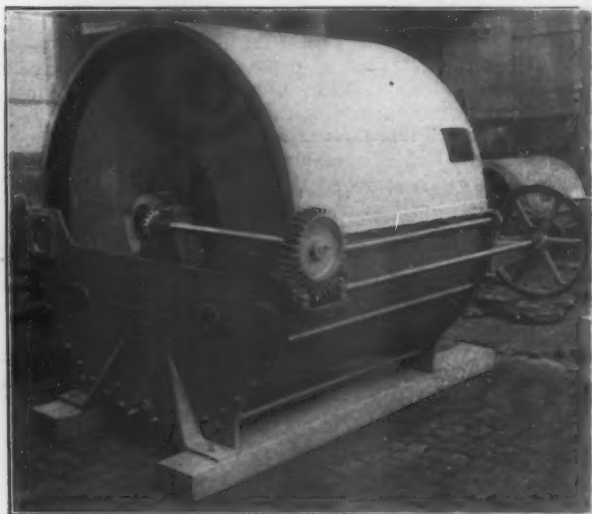


Fig. 1.—The Driving End of a New Type of Water Cooler Built by the Power Specialty Company, New York, N. Y.

the moving cooling surface, a fan for circulating air and a pump, when needed, for circulating water. Sheet or cast iron or concrete is used for the casing according to the size of the machine, and the lower part of the casing

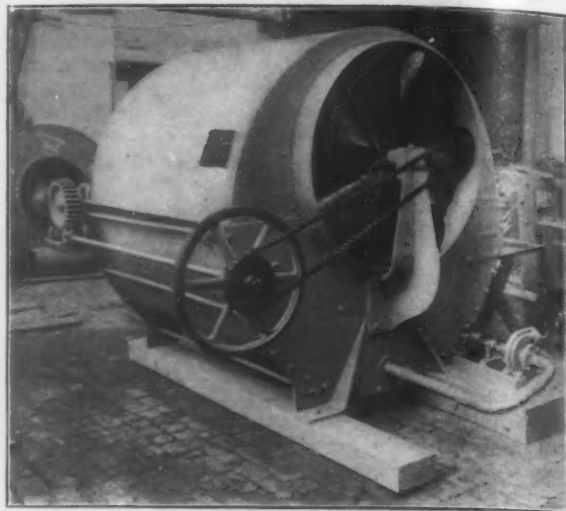


Fig. 2.—The Discharge End.

forms a trough in which water circulates. The rotor, which is made up of thin annular plates nested concentrically and supported from a central shaft that revolves slowly in outside bearings, completely fills the casing. The fan is mounted at the end of the casing and blows air between these plates.

In operation for cooling water the air and the water are passed through the machine in opposite directions, thus forming counter currents. The slowly revolving plates pass through the water in the trough in the lower part of the casing and through the air in the upper portion of the chamber. In this way the freshly wetted surfaces are brought into contact with the air current at each revolution and the thin film of water on the surface of the plates is partly evaporated by the air passing over them. This causes the heat given to the plates by the warm water to be rendered latent, while additional heat is extracted from the water by conduction so that the cylinders are continually cooling the water. Under ordinary atmospheric conditions from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  per cent. of water is evaporated and this is made up automatically by connecting the cooler to any ordinary source of fresh water supply. The power required to operate the cooler, including the fan and the circulating pump, is said to be approximately  $\frac{1}{2}$  per cent. of that developed by the engine being cooled.

As will be noticed from Fig. 3, which shows one of the coolers installed in an engine room for cooling gas engine jacket water, the machine is very compact and occupies small space and requires no storage tank. As compared with the cost of the water storage tanks required by large engines, with the necessary heavy walls and steel supports, it is claimed that the cost of a complete instal-

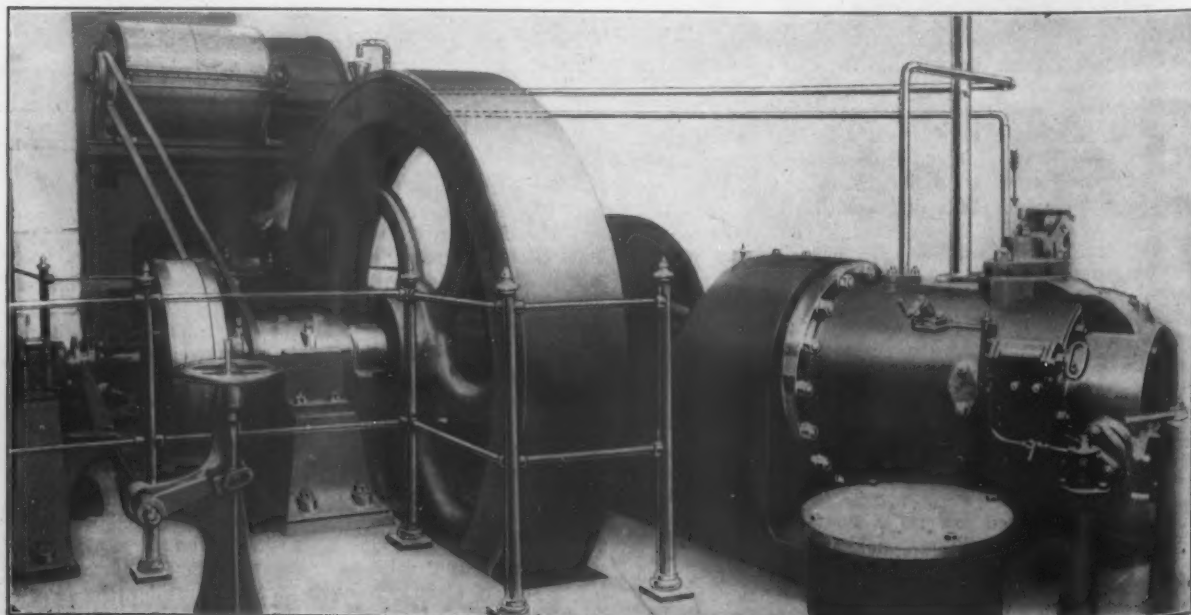


Fig. 3.—The Power Water Cooler Installed in an Engine Room for Cooling Gas Engine Jacket Water.

lation of the cooler is frequently less, and at the same time the work is said to be done continuously and better than the storage tanks can do it. Installed in connection with a gas engine, the cooler extracts the heat from the water leaving the cylinder jacket as rapidly as it is made and returning the water to the engine cooled to the proper temperature. In this way it is claimed that troubles from carbonization, back-firing, etc., are eliminated. When installed in connection with suction gas plants the cooler eliminates the necessity frequently resulting of running the water supply continuously through the cylinder jacket, owing to lack of space for the large storage tanks required, with the result that the cost of water might equal the cost of the fuel. Since the cooler takes up much less space than the tanks and can be located in any convenient place, it is possible to utilize suction gas for fuel where it otherwise might not be possible. The engine works under the same jacket water temperature throughout the entire run, while the heat is dissipated by the cooler as fast as it is made and not stored.

In addition to being used in connection with the cooling of jacket water, the cooler can also be used for cooling air, and as cold water is circulated through it the temperature of the air can be reduced to within a few degrees of that of the water. In connection with refrigerating machinery the device may be employed to bring the air down to 10 or 15 deg. F. When installed for this purpose two-stage coolers are used, the first employing cold water at about 40 deg. F., and the second stage making use of brine at about 5 deg. F. The moisture in the air is deposited on the plates of the cylinders as the air is cooled down, and there is no trace of free moisture leaving the cooler. The cold air may be used for cold storage or other purposes. Other applications of the cooler are as an after cooler to supply cool compressed air to air locks and for cooling air in connection with the dry blast of blast furnaces. When used in connection with one of these installations all the brine piping is eliminated with a corresponding reduction of the cost of the installation and the buildings required to house it. Two-stage cooling is used in this case, which results in a considerable saving in the amount of power required to operate the plant. All trouble from frosting is said to be eliminated when the cooler is used for this purpose, as no frost forms on the surface of the apparatus, and at the same time a uniform volume of air can be delivered to the furnace continuously.

### Exports of Manufactures Approaching Billion-Dollar Line

The value of manufactures passing out of the United States in the calendar year 1911 may exceed one billion dollars. This estimate is based upon figures of the Bureau of Statistics, Department of Commerce and Labor, covering the exports of manufactures in the nine months ended with September, 1911, which amount to 478½ million dollars for finished manufactures and 240½ million for manufactures for further use in manufacturing, making the total exports of manufactures in the period named 719 million dollars, against 612 million in the like period of 1910. The increase in the nine months of 1911 over the like period of 1910 is 17.48 per cent, and in case the increase during the remainder of the year continues at the same rate the total value of manufactures passing to foreign countries in 1911 will be about 970 million dollars. When to this is added the value of manufactures going to Alaska, Porto Rico and Hawaii, not included in the exports to foreign countries, the total outward movement of manufactures from continental United States in 1911 will pass the billion-dollar line. This will bring the total value of manufactures exported in 1911 to more than twice that of 10 years ago and more than five times that of 20 years ago, the exports of manufactures in 1901 having been 447½ million, and in 1891 about 185 million dollars.

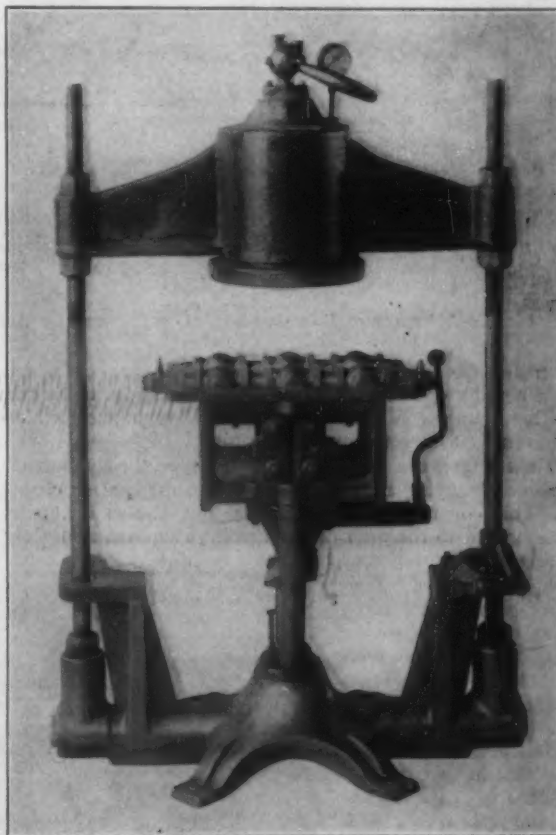
Practically all the leading articles of domestic manufacture show increased exports when compared with the preceding year, many of them making new high records in the year now approaching its close. Iron and steel manufactures, which head the list of domestic manufactures exported, give promise of a total of 250 million dollars in the calendar year 1911, compared with 201 million

in 1910 and 102½ million in 1901, a decade earlier. Copper manufactures, including pigs, bars, etc., will approximate 100 million dollars in the year's exports, compared with 94 million in 1910 and 33½ million in 1901.

### Power Squeezing with Molding Machine

#### Arrangement of Drop Plate and Stripping Plate Molding Machines

Following four years of development and testing under working conditions, Henry E. Pridmore, Nineteenth and Rockwell streets, Chicago, has placed on the market an arrangement of its standard drop plate and stripping plate molding machines which offers the added advantage of a power squeezing attachment. The accompanying illustration presents a view of this machine upon which a valve body pattern is mounted. The device consists of the standard type Pridmore machine to which has been added suitable standards and swinging uprights for carrying an air cylinder. The cylinder is cast integrally in a heavy ribbed frame, which is adjustable on the uprights for flasks of varying heights. Air of 70 lb. pressure is most satisfactory for the operation of the machine. The cylin-



Molding Machine, Made by Henry E. Pridmore with Power Squeezing Attachment.

der is provided with a guide for the piston to prevent its turning. The space between the uprights has been made sufficient to keep the draw lever close to the flask and in a position where it may be operated by the workman's knee. Flasks up to 18 in. square or 20 in. diameter can be accommodated.

The spring and balancing attachment, controlling the uprights, are placed at a point well above any piles of sand on the foundry floor, to obviate the possibility of accumulations in the mechanism which would tend to clog the operation of the uprights. The stock machine has a draw of 4½ in., which may be increased to 6 in. A number of machines have been installed at the plant of the Pratt & Cady Company, Hartford, Conn., where they are used for making valve molds, and there unusually favorable records have been made. Using a standard square machine with the power squeezing attachment on 1-in. valve patterns, one man put up 310 flasks per day, the work incidentally requiring the setting of twelve cores. Working on 1½-in. valves, one man put up 260 flasks per day.

## Oil-Fired Furnaces for Automobile Parts

### A Recent Installation of Buckeye Furnaces for Case Hardening and Heat Treating Gears

An interesting Buckeye oil furnace equipment was recently built by Walter MacLeod & Co., 213 East Pearl street, Cincinnati, Ohio, for the Warner Mfg. Company, Toledo, Ohio. It is to be used for case hardening and heat treating the automobile transmission and steering gears made in the Warner Company's plant, and consists of five case-hardening furnaces and two heat-treating furnaces, together with the various auxiliaries, such as a blower, oil pump, pyrometer equipment, oil storage tank, air and oil piping and pressure gauges and a meter for determining the consumption of fuel. The heating chamber of each case-hardening furnace is 54 in. wide and 72 in. long, the five being combined in one battery, as shown in Fig. 1. Fig. 2

air blast is controlled by a valve located just below the oil burner, thus enabling the operator to fire and regulate the furnace easily.

A uniform distribution and maintenance of a temperature of 1560 deg. F., it is stated, is secured with a variation of not more than 20 deg. throughout the hearth. The case-hardening furnaces also operate at this temperature, but at the discharging periods this is lowered 250 deg., the loss being made up in 30 min. The capacity of the case-hardening furnaces at this temperature is 190 sets of transmission gears per 24-hour day, with an average penetration of  $1/32$  in. The carbonizing material used is granulated raw bone, and the work is done with an oil consumption of 840 gal., which is equal to 4.4 gal per set, which at a cost of  $2\frac{1}{4}$  cents per gallon for oil makes the cost of the hardening operation 9.94 cents per set; the oil consumption of the heat-treating furnaces which are used for various classes of work is 4 gal. per hour on an average.

The supplies of oil and air are furnished by an electrically-driven unit consisting of a No. 8 steel pressure Type P blower built by the American Blower Company, Detroit,

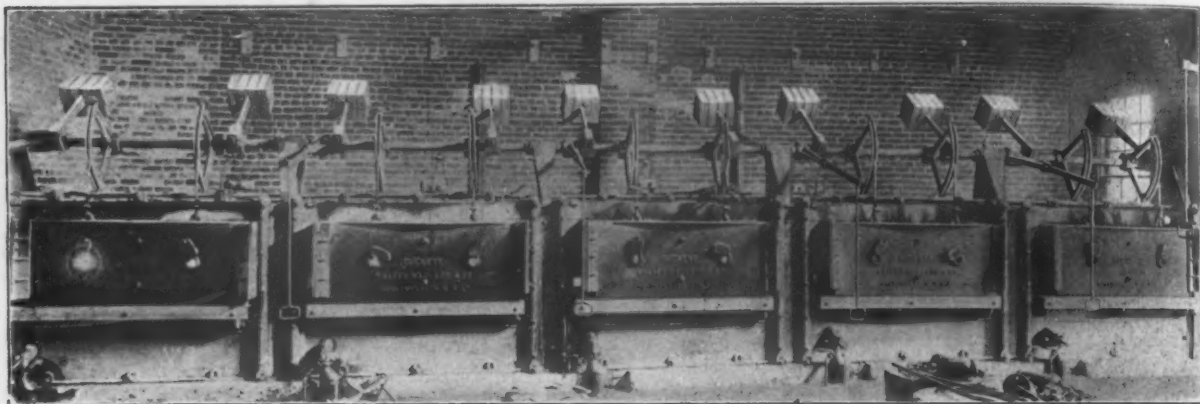


Fig. 1.—A Battery of Five Case-Hardening Furnaces for Automobile Parts Made by Walter MacLeod & Co., Cincinnati, Ohio.

illustrates the two heat-treating furnaces, each of which has a heating chamber 32 in. in width and 49 in. in length, together with an A.B.C. steel fan pressure blower, which is driven by a direct-connected motor.

The furnaces are of the semi-muffle type, the combustion chamber occupying a position adjacent to the heating chamber. This construction, it is pointed out, causes the gases to be carried to the arch of the heating chamber, and after heating the material they pass out and into flues in the side walls leading under the hearth to the top of the chamber. This construction also takes advantage of the natural tendency of the hot gases to rise, and it is emphasized that in this furnace but little expense for the renewal of the hearth and the baffle blocks is incurred, since the former is practically a solid foundation built of ordinary firebrick, the top course of which alone requires renewal due to the constant wear of the boxes. Common fire brick is used to form the pockets, and these can be removed in a few minutes while the furnace is hot if necessary.

One oil burner suffices for each furnace, and this is placed in front of the furnace and parallel with the combustion chamber, an auxiliary air blast entering at the opposite end and taking the place of a baffle. The burners used are of the builder's standard pressure blower type and are operated with an air pressure of 9 ounces. The auxiliary

Mich., connected by a flanged coupling to a 15-hp motor mounted on a pedestal attached to the side of the blower and a No. 1 Buckeye rotary oil pump that is mounted on the blower pedestal and driven from the blower shaft by gearing. The capacity of the blower installed, it is explained, is in excess of the present requirements, but was adopted with a view to taking care of additional furnaces to be installed at a later date. When this installation is

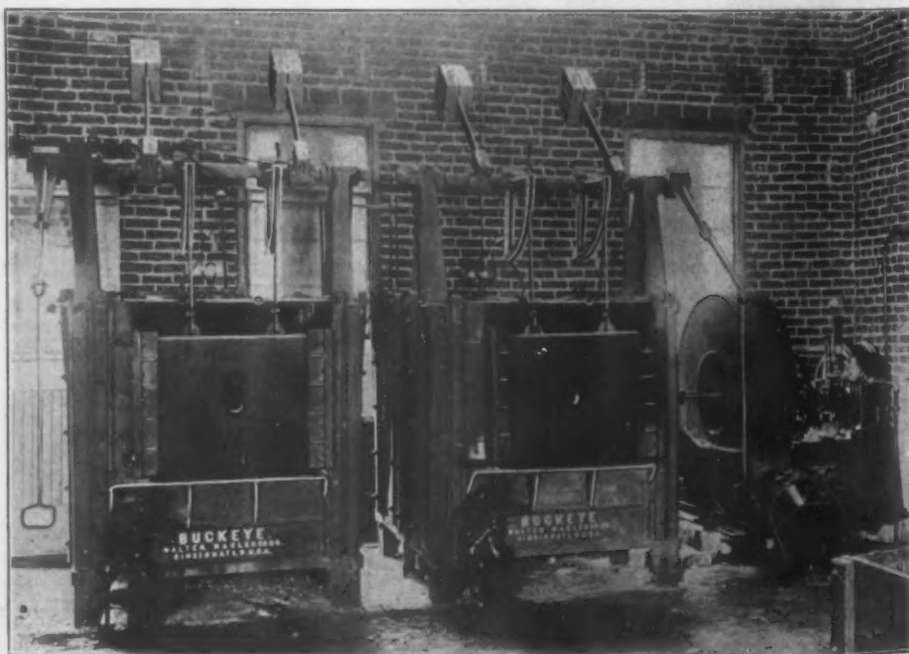


Fig. 2.—Two Oil-Fired Heat-Treating Furnaces.

made to take care of future requirements it will only be necessary to increase the speed of the fan and the horsepower of the driving motor, as the piping has been arranged for the maximum capacity of the fan. At present

the fan is driven at a speed of 1460 r.p.m. and approximately a 20 per cent. ratio opening is used which supplies 2830 cu. ft. of free air at a pressure of 9 oz. per minute. The oil pump is fitted with check and relief valves, pressure gauge, primer and the other necessary auxiliaries for a suction return system drawing oil from a central storage supply. The pump draws a supply from an oil storage tank having a capacity of 12,000 gal., and when operating at a speed of 180 r.p.m. will deliver 9 gal. per minute at a pressure of 40 lb.

The pyrometer employed is of the Taylor multiple indicator wall type, with base metal thermo-couples, one for each chamber being located in the center of the rear wall.

### The Economy Welding Machine

Both large and small repair shops have been considered in the design of a new portable welding machine that has been placed on the market by the Economy Welding Machine Company, Kansas City, Mo. The special features of the machine are a new type of carbide to water feed and the adaptability of the welder for small shops. Fig. 1 is a general view of the machine, while Fig. 2 shows an enlargement of the upper portion of the acetylene generator and the feeding device.

As will be noticed from Fig. 1, the machine is of the portable type and is entirely self-contained. The oxygen is stored in the large tank at the left after being generated in the small retort shown in the lower left corner which is filled with a mixture of potassium chlorate and black oxide of manganese in the proportion of 112 to 18. These chemicals are placed in a pan which is inserted in the retort after the burners which heat the welder have been lighted about 20 min. The gas passes off into the tank at the left, where it bubbles through water to which a little caustic soda has been added. The gasoline for heating the burners is supplied from the small elevated tank located directly over the retort. In generating

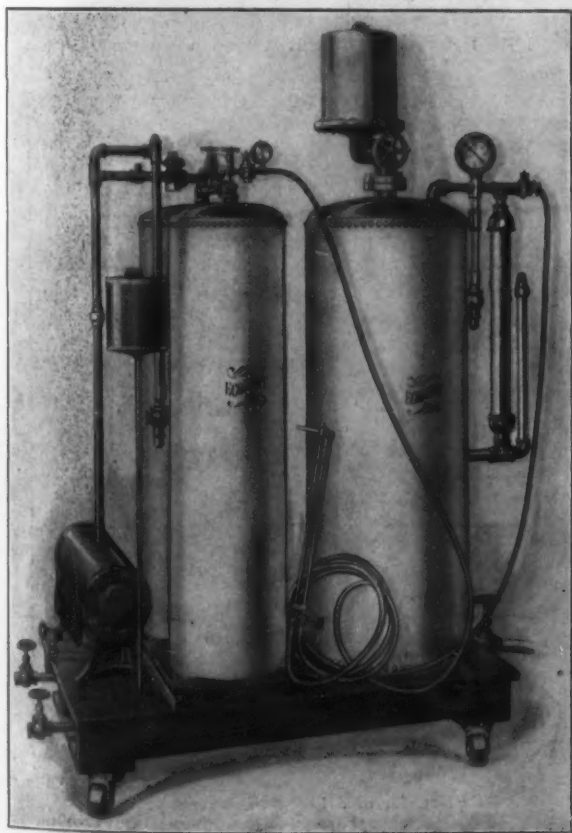


Fig. 1.—A New Portable Welding Machine Built by the Economy Welding Machine Company, Kansas City, Mo.

the gas care must be taken not to produce too much heat, as, otherwise, fusing of the iron in the retort might occur. To prevent this the builder recommends that in using a machine equipped with three burners the middle one be turned out as soon as the gas begins to pass into

the tank if work is being done indoors, but if working in the open air this precaution need not be taken.

In generating the acetylene the calcium carbide which is placed in the small hopper tank shown above the large tank at the right of Fig. 1 and at the top of Fig. 2. The hand wheel which is shown back of the horizontal pipe

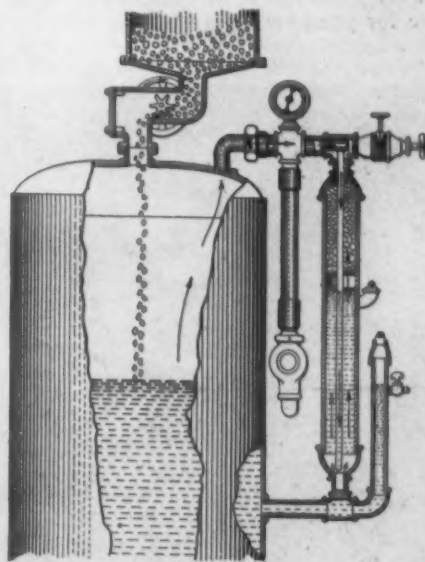


Fig. 2.—View Showing the Upper Portion of the Acetylene Generator and the Feed.

connecting the hopper with the large tank in Fig. 2 is turned until the pressure gauge at the right of the large tank registers 10 lb. This hand wheel operates the small star wheel shown in the horizontal pipe and feeds the required amount of calcium carbide into the large lower tank where acetylene gas is generated. This small star wheel rotates and feeds the carbide until sufficient acetylene gas has been generated.

The two gases are led through lines of rubber hose to the torch which is shown on the base of the machine leaning against the acetylene tank. This torch is of the medium pressure injector type and uses acetylene at a medium pressure. In this way it is pointed out that a surplus of acetylene is forced into the torch. Back-firing is said to be avoided in this torch since the gases are mixed approximately 1 in. from the nozzle in a specially designed mixing chamber. In use this torch is said to be very economical since it does not blow out and waste gas while the torch is being readjusted.

This machine is used for repairing castings of various metals which have become broken, drop forgings or combinations of metals; building up worn parts of machinery, such as lugs, bosses, etc.; adding teeth to gear wheels and for cutting boilers, I-beams and other parts that are to be junked.

Automobiles have played a large part in the country's export trade in the past six months, an average of 150 machines a week having been shipped from the port of New York alone in that time. As a climax of this movement, the New York Central, October 31, brought to New York a special train of 40 cars, all loaded with automobiles from Detroit for export. The contents of the train consisted of 160 machines from the E-M-F factory, of which 80 are for London and the remainder for Australia. The United States is shipping motor cars to countries which not very long ago were sending some of their output here. The durability and lower prices of American cars are held to be the chief causes of their popularity abroad.

At a meeting of the Executive Committee of the Master Boiler Makers' Association, held at the Fort Pitt Hotel, Pittsburgh, October 28, it was unanimously decided to hold the sixth annual convention of the association in Pittsburgh May 14 to 17, 1912, with headquarters at the Fort Pitt Hotel. George N. Riley, National Tube Company, was made chairman of the General Committee of Arrangements and Roger T. Flannery, Flannery Bolt Company, secretary and treasurer.

### The Ransom Portable Grinder

A portable motor-driven grinder has been recently brought out by the Ransom Mfg. Company, Oshkosh, Wis., and the accompanying engravings show it in use at the plant of the Price Steel Company, Milwaukee, Wis. Fig. 1 shows the grinder in some detail, while Fig. 2 illustrates its use for grinding the interior surface of a large casting.

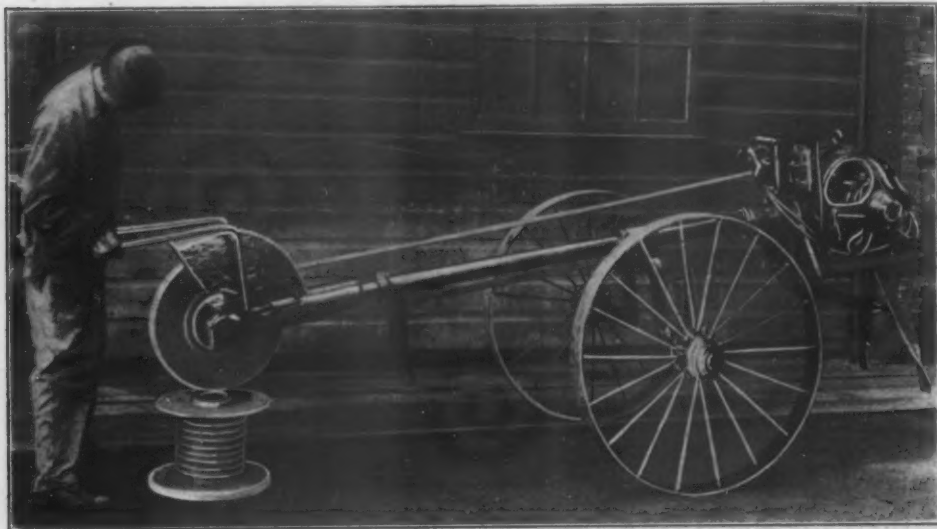


Fig. 1.—The New Portable Motor-Driven Grinder Built by the Ransom Mfg. Company, Oshkosh, Wis.

In the construction of the machine steel castings have been employed throughout. A 5-hp. motor supplies the power for driving the grinding wheels which can have a maximum diameter of 24 in. and a maximum face width of 3 in. The motor plate is connected to the arbor yoke by a  $2\frac{1}{2}$ -in. gas pipe which telescopes to permit the tension of the belt to be adjusted. The diameter of the arbor is 2 in. The grinder is mounted on a truck having two 42-in. wheels which are set so that the distance between them is equal to their diameter. The weight of the machine exclusive of the driving motor and the grinding wheel is approximately 600 lb.

**Bessemer Gas Engines.**—Four attractive pamphlets have been recently issued by the Bessemer Gas Engine Company, Grove City, Pa., relating to its line of gas engines and their applications. The first of these presents illustrations and a brief description of the engines, which are of the single-acting type and are characterized by a compact construction, having few parts. These parts are all illustrated and briefly described. The various types of engines are shown, together with compressors, gasoline plants, engine-driven pumps and gas producers. The second pamphlet, which is known as Bulletin B, deals with the Bessemer direct-driven gas and air compressors. The construction of these compressors is described at some length, and a partial list of users is given, together with half-tone engravings of several installations. The third pamphlet, which is entitled, "The Production of Gasoline from Natural Gas," is a reprint of an article appearing in the company's house organ and shows how a

large percentage of the gas burning waste product of oil operations can be utilized. The last pamphlet is termed "The Blue Book of Bessemer Buyers" and contains a partial list of users, together with views of installations and a number of testimonial letters.

Due to the fast increasing business in Birmingham, Ala., the H. W. Johns-Manville Company has found it necessary to remove its office from 1220 Empire Building to 606 Chamber of Commerce Building, this latter location being better adapted for its requirements. The Birmingham office will continue under the management of W. H. Fleming, who is well and favorably known throughout that section of the country, having been connected with the New Orleans branch of the company for a considerable time. A complete line of J-M products, electrical supplies, packings, etc., will be handled from that office.

Some interesting facts regarding the Atlantic fleet mobilized recently in New York have been collected by the International Steam Pump Company and not the least interesting fact to the company is the finding that of the 102 vessels comprising the fleet Blake & Knowles pumping equipments were provided on 65 of the 93 vessels carrying steam pumps. The fleet had a combined displacement of 577,285 tons, not including eight submarines, exceeding the



Fig. 2.—The Grinder In Use on the Interior of a Large Casting.

San Francisco mobilization in 1908 by 169,361 tons; the total horsepower of the vessels, exclusive of submarines, was 946,811; all but the Iowa have water tube boilers; the average speed of the vessels is 21.6 knots.

The Stanley Steel Corporation investigating committee adjourned November 2, subject to the call of Mr. Stanley, who is in Kentucky in connection with the political campaign. The committee will reconvene November 20.

## A Blast Furnace Charging Car

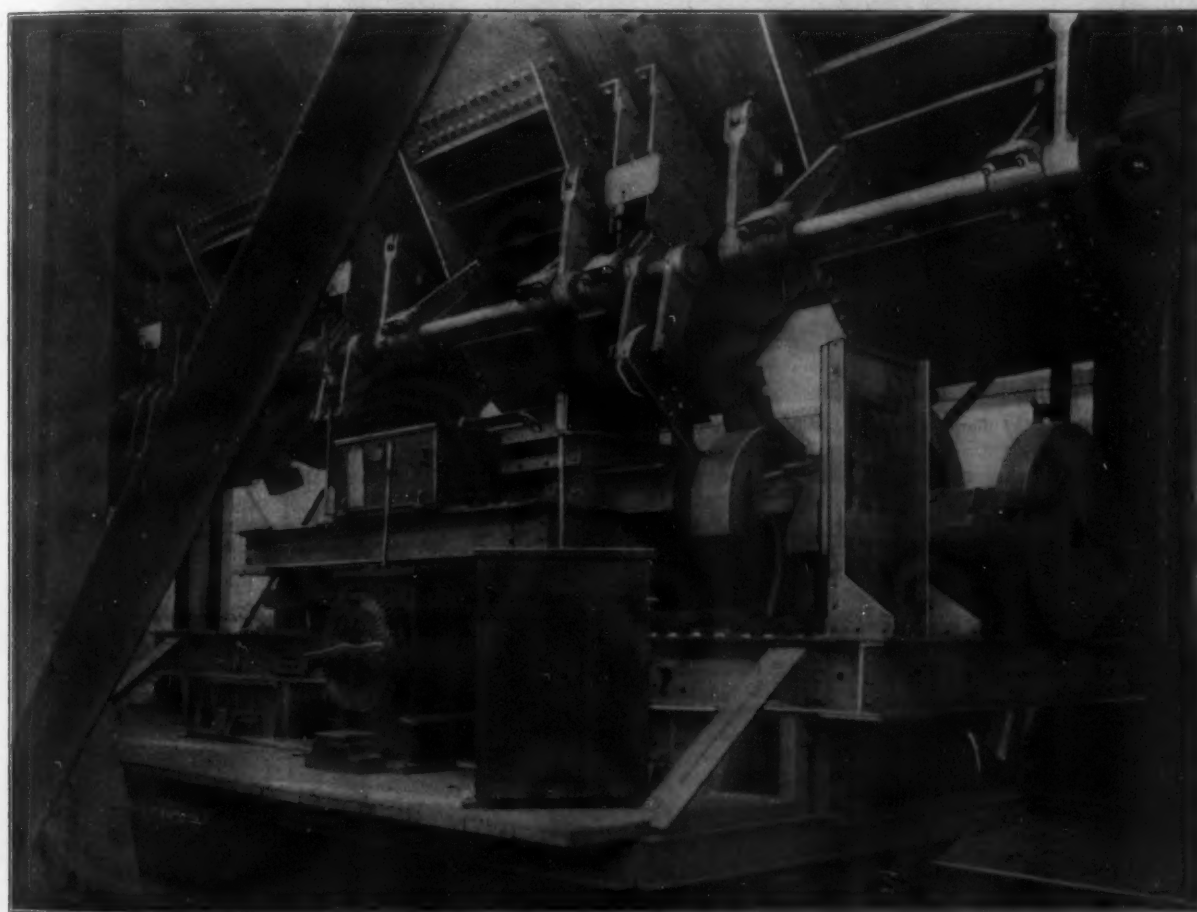
In the past 12 years a number of charging cars have been built, and from time to time improvements have been made in an effort to simplify the system, reduce operating cost and to cut down repairs to a minimum. A 5-ton electrically operated charging car, the invention of George K. Hamfelt, is shown in the illustration, applicable to an overhead, parabolic-shaped bin system and so designed that one man can weigh and charge all the material required, except the coke, for a modern blast furnace of 600 tons daily capacity. The car is mounted on four wheels for standard gauge track and is movable on the track along the bin by means of an electric motor geared to the traction wheels, in a way similar to that employed in street car service. For the purpose of weighing the materials the charging car is also provided with a Fairbanks 8-lever suspension scale, arranged so that the receiver is always suspended on the pivots of the scale, and easily accessible for inspection and cleaning.

The special feature of the Hamfelt charging car is the

balanced as to make the work of lifting the hook arm and engaging it with the connecting pin an easy task for the operator. The hook itself is provided with a latch, so as to hold the connecting pin, and the latch is constructed so as to be used as a handle for the operator in engaging and disengaging the connecting pin. If the hook happens to be placed in a suitable position, it can be engaged by lifting the hook arm; otherwise the motor can be started slowly and then the hook engaged. When disengaged, the motor can also be started without any accident, as the hook arm is then resting on a projection of the charging car.

Both the electric motors are controlled by Dinkey controllers placed on the operator's platform, and are so arranged that the operator with a slight movement can reach them, as well as the scale and the hook arm and also see the switchboard. The electric power is 240 volt D. C. and is taken by an overhead trolley system. The total weight of the empty car is such as to prevent shaking of the car or even the slightest disturbance of the scale during the discharge and weighing of the materials.

Five of these charging cars are now in operation. A



The Hamfelt Charging Car for Blast Furnaces.

quickly made and foolproof connection between it and the bin chutes or swinging gates; also the oscillating movement of this connection and the gates whereby the discharge of the material is effectually regulated, so that either a large or a small quantity can be weighed with accuracy.

The chutes are provided with a set of bearings, a shaft and a double set of levers, one engaging the swinging gate, and the other connected with a pin which is given an oscillating movement from the counterbalanced hook arm on the charging car. The counterweight is not visible in the illustration. To obtain this motion, the charging car is provided with a variable speed electric motor, which drives a train of gears so as to regulate the movement of the hook arm to a suitable number of strokes per minute. A variation in the speed is desirable for opening and closing the gate as well as for the discharge of a larger or a smaller quantity of material.

The counterbalanced hook arm is pivoted to a rotary disc driven by the gear train. On one end of this arm is the counterweight and on the other end the hook, so

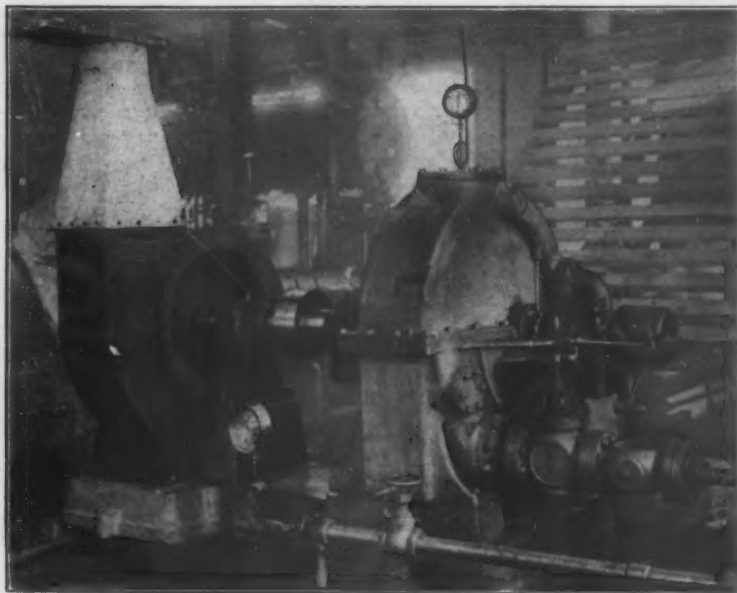
patent has been allowed in the United States and has been applied for in various other countries. Mr. Hamfelt, the inventor, has offices at No. 1 Strandvagen, Stockholm, Sweden. He was formerly blast furnace manager of the Carrie furnaces of the Carnegie Steel Company and later was connected in a similar capacity with the Midland Steel Company, Midland, Pa.

Cecil A. Grenfell, chairman of the committee of the merger between the Alabama Consolidated Coal & Iron Company and the Southern Iron & Steel Company, in speaking of the meeting in Baltimore of preferred stockholders, says that there is already enough of the preferred and common stock of the companies either deposited or agreed to be deposited by a signed statement to secure control of the company and complete the merger. This, of course, means that meetings of the minority stockholders will have no effect on the success of the merger plan.

## High Pressure Blower Set

### Tests of a Notable Steam-Turbine-Driven Centrifugal Blower

A centrifugal blower delivering air at over 40 in. of water pressure, or nearly  $1\frac{1}{2}$  lb. per square inch, is a new idea to those familiar with centrifugal blowers, which are seldom operated at more than 25 in. of water. At the works of the Terry Steam Turbine Company a new turbo-blower set was recently tested to see if it would meet the guarantees. The tests of this new design were naturally exhaustive and conducted with great care. The blower set, which consisted of a double-inlet Sturtevant multivane



Sturtevant Blower Connected to Terry Steam Turbine.

centrifugal blower mounted on same cast-iron bed with a Terry turbine, and direct-connected by flanged couplings, was to deliver 14,000 cu. ft. of air per minute against a pressure of 40-in. water gauge. This test was to determine the water rate of the turbine and the closeness of the speed regulation as well as the volume and pressure of air. During the test pressure, temperature and calorimeter measurements were made of the steam just before the governor valve, and the exhaust pressure was measured in the exhaust pipe just beyond the outlet of the turbine. The exhaust steam was taken to a surface condenser and the discharge water from the hot well was weighed. The condenser was vented at the top so that it would not allow a vacuum at the exhaust of the turbine, which was run non-condensing.

To measure the volume of air discharged by the blower a long tapered cone having a coefficient of discharge of 0.94 was attached to the outlet, the pressures being taken with a mercury U-tube. The blower was to deliver 14,000 cu. ft. of air per minute, but averaged 15,169 cu. ft. for nearly an hour. The steam required for the turbine was not to exceed 7600 lb. per hour, but during this test steam was used at the rate of 6587 lb. per hour, or 13.35 per cent. less than the guaranteed maximum. The air pressure maintained was to be 40 in. of water, but for nearly an hour this blower averaged 47.3 in., or over  $1\frac{1}{2}$  lb. per square inch. It reached a maximum during a portion of the test of 51.7 in. Considering the excess in both volume of air and the pressure at which it was discharged, the blower set delivered 27.5 per cent. more work than was called for. Reducing the guaranteed conditions to steam consumption per air horsepower gave a result of 58.5 lb., as against the guarantee of 86.13 lb.

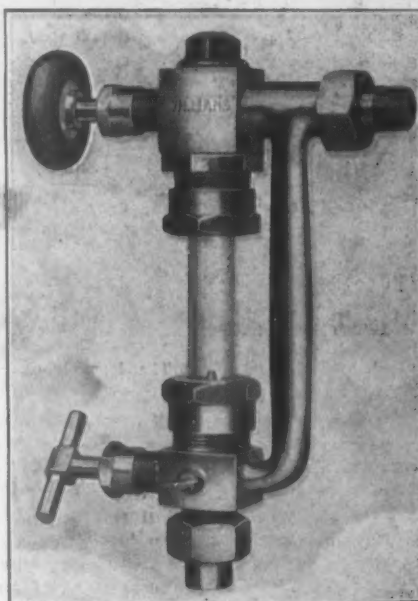
The average of the observations made in the tests were: steam at nozzle throttle, 145 lb.; steam pressure at nozzle inlets, 102.5 lb.; total water rate corrected to saturated steam, 6587 lb.; speed, 2463 r.p.m.; velocity pressure reduced to inches of water, 47.3; volume of air delivered, 15,169 cu. ft. per minute; air horsepower, actual, 112.6. A separate test to determine the speed variation gave the following results: The turbine was operated at 2490 r.p.m. without load; with full load thrown on mo-

mentarily the speed was 2400 r.p.m., and with the full load soon settled to 2460 r.p.m. This shows that the momentary speed drop was 3.6 per cent. and the settled drop only 1.2 per cent. While the blower was running under full load at 2460 r.p.m. the gate was closed suddenly; the speed momentarily jumped to 2575 r.p.m., or 4.7 per cent., but it quickly settled to 2490 r.p.m., or an increase of 1.22 per cent. over that at full load.

## The Warrior Sight Feed

For use wherever it is desired to lubricate the cylinders of several engines from a large and conveniently located central tank the D. T. Williams Valve Company, Cincinnati, Ohio, has placed on the market an independent sight feed to which the trade name Warrior has been given. The system with which this feed is intended to be used consists of a tank of ample proportions to hold the cylinder oil with piping to transmit hydrostatic pressure to the tank. This pressure forces the oil to the top of the tank and out through the various supply pipes and finally through the sight feeds into the steam pipes above the cylinder. The special advantages claimed for this method of lubrication are economy, since the time and loss of oil occasioned by the constant refilling of small individual lubricators is saved.

This feed is intended for use either on simple or compound engines, and when furnished for the latter it is equipped with an equalizing attachment to prevent the oil from siphoning. The construction of this device is heavy and a large sight feed space, which is a desirable feature, is provided. The oil supply pipe is connected to the union at the bottom and the lubricant passes up through the nozzle inside the glass to the engine, the amount being regulated by the T handle valve at the bottom. A small drain plug provides a means for draining the feed when it becomes necessary. The glass if broken can be easily replaced by unscrewing the stuffing boxes at the top and



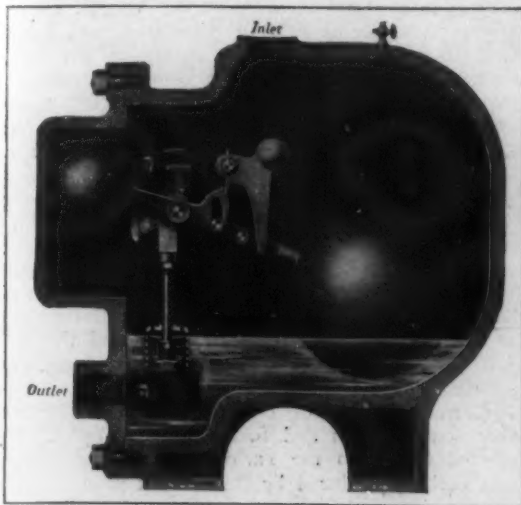
The Warrior Independent Sight Feed Made by the D. T. Williams Valve Company, Cincinnati, Ohio.

the bottom of the glass. The oil supply connections are  $\frac{3}{4}$ -in. pipe while that to the steam pipe is  $\frac{3}{8}$  in. and the equalizing connection is a piece of  $\frac{1}{2}$ -in. pipe.

The W. W. Sly Mfg. Company, Cleveland, Ohio, maker of foundry supplies, has increased its capitalization from \$25,000 to \$35,000.

### The Wyoming Steam Trap

In addition to the piston-operated steam trap used in connection with automatic eliminator which was illustrated in *The Iron Age*, April 13, 1911, W. H. Nicholson & Co., Wilkes-Barre, Pa., manufacture a weight-operated trap for



The Wyoming Weight-Operated Steam Trap Manufactured by W. H. Nicholson & Co., Wilkes-Barre, Pa.

use with pressures ranging from 0 to 150 lb. It is pointed out that, while a float is employed and is necessary in the action of the trap, it nevertheless does not come under the head known as the float-operated type. The float is only instrumental in releasing the valve weight, which in dropping lifts the discharge valve. Reliance is not placed upon the buoyancy or weight of the float to unseat the discharge valve and lift it. One of the special advantages of this trap due to this feature is that by the instantaneous opening and closing of the discharge valve wire drawing is prevented. The valve weight is a levered cast-iron ball moving in the recess at the left of the accompanying engraving. The weight of this part governs the capacity or size of the hole through the discharge valve seat and it is thus possible to operate a discharge valve of any practical size by increasing the mass of the valve weight.

In operation the water enters the trap, raising the float to its highest point of travel when it releases the weight latch and allows the valve weight to fall. The action of the valve weight in falling in conjunction with the crank opens the discharge valve to its fullest extent at once. It is kept in this position by the rod latch until the float, following the water as it empties from the trap, reaches the lowest point of its travel, which is shown in the accompanying engraving. The movement of the float in falling raises the valve weight and when the former has reached its lowest position the weight latch is again engaged and the rod latch disengaged, thus permitting the discharge valve to close instantaneously.

Another special feature of the trap is that a waste of steam due to leaks can be readily detected, since the valve is entirely open or closed at all times. The instantaneous valve movement and intermittent discharge is another ad-

vantage claimed for the trap since sudden discharging causes a syphonic action in the pipe line which draws the water from all the pockets along its line.

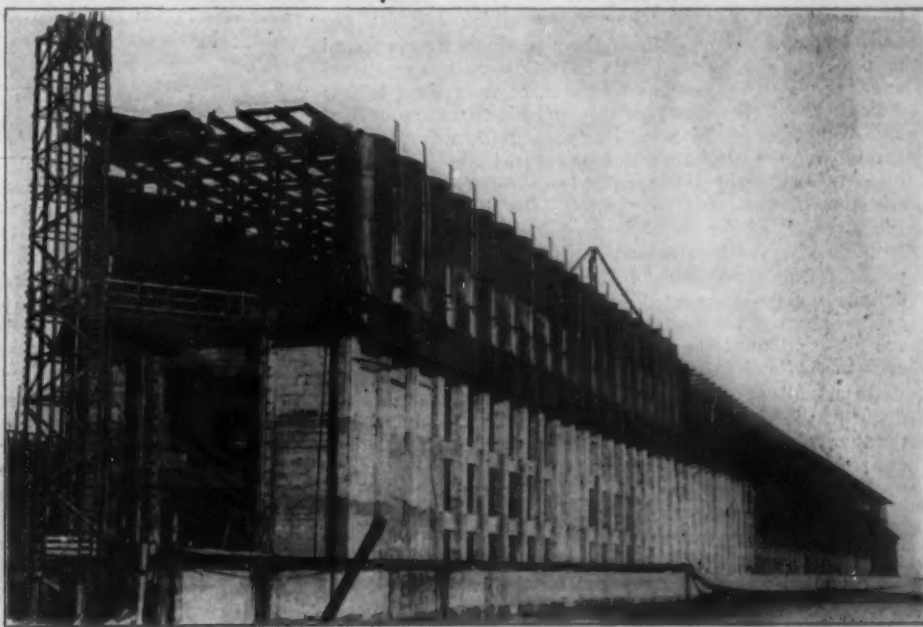
The working parts of the trap are attached to the cover, which can be easily removed by loosening two bolts. Six sizes of traps capable of draining from 3500 to 35,000 lineal feet of 1-in. pipe are made. These traps will discharge from 350 to 3100 gal. per hour at 5-lb. pressure and from 275 to 1200 gal. in the same time at a 100-lb. pressure.

The Double Truss Cornice Brake Company, 33-39 Chandler street, Buffalo, N. Y., has shipped more machines to foreign countries this year than in any three previous years. The company has not only sold machines to go to Alaska, Mexico, the Philippine Islands and Porto Rico, but to Australia, New Zealand, South Africa, Russia, Italy and the British Isles.

The world's record in plowing was eclipsed at Purdue University, Lafayette, Ind., on October 14, according to the Lafayette Courier of that date. The information came shortly after the publication of the articles in our issues of October 26 and November 2, describing the foundry and machine shops of the M. Rumely Company, LaPorte, Ind., which made the traction engines used in the test. There were three Oil-Pull tractors which hauled a unit of 50 plows fixed together side by side. A stubble field was turned over at the rate of an acre every 4 min. and 15 sec.

### New Concrete-Steel Ore Dock

An iron-ore dock of novel construction is being built at Marquette, Mich., for the Lake Superior & Ishpeming Railway Company by the Wisconsin Bridge & Iron Company, Milwaukee, Wis. It will be noticed from the engraving that the lower portion is of concrete with a light



A New Concrete-Steel Ore Dock Built for the Lake Superior and Ishpeming Railway Company by the Wisconsin Bridge & Iron Company, Milwaukee, Wis.

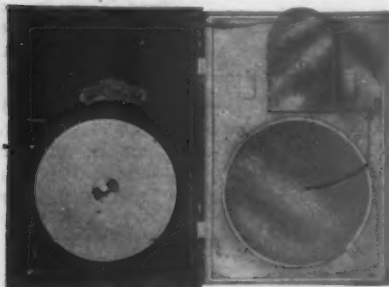
reinforcement of structural steel, while the bin construction and railroad tracks are of steel. As compared with the older type of wooden ore dock and the newer form where steel is employed throughout, this type of construction lies between the two as regards cost, being more expensive than the former and much cheaper than the latter. It is expected that in service the dock will prove more durable and that the maintenance cost will be very much lower than that of the wooden dock.

The dock, which is 75 ft. high and 60 ft. wide, will provide storage capacity for 60,000 tons of iron ore. The length of the dock proper is 1200 ft., while the total length of the steel structure, including the approaches and the tail trestle, is approximately 700 ft. more. There are four railroad tracks on the top of the dock. The machinery and the chutes, of which there are 200 sets, are operated by electricity.

### A New Electric Recording Instrument

A new type of electric recording instrument particularly adaptable for use as a recording electric pyrometer, recording voltmeter or ammeter has been designed by the

Brown Instrument Company, Philadelphia.



Brown Electric Recorder with Pointer on Door.

It is for use on the wall or switchboard and by the inexperienced workmen. To overcome the danger of bending the recording-pen arm when the chart which receives the record is

changed, the essential parts of the instrument are mounted on the door instead of in the case. The clock mechanism and chart alone remain in the case when the door is opened. Consequently there is no possibility of bending the pen because there is no occasion to handle it for any reason whatever. As soon as the door is thrown open the entire voltmeter system and the inking device is swung aside automatically, permitting the old chart to be easily removed and a new one substituted.

### Temperature Pendants

For measuring the temperature of flue gases cheaply and efficiently the Green Fuel Economizer Company, Matteawan, N. Y., has devised a set of temperature pendants. These consist of fusible alloys of the proper composition to indicate the desired temperatures which are 425, 500 and 550 deg. F. In designing these pendants it was found that the melting points of the metals were too uncertain and evasive to be used as temperature tests since it was difficult to tell the exact point at which the metal melted and even after it did a hard skin of oxide was generally formed on the surface which prevented the metal from running easily and was thus likely to confuse the determination of the exact temperature. In this case the tensile strength of the metal is used instead of the melting point to give the true indication of the temperature. The pendants are made with a large body, having a certain definite weight, suspended from a narrow neck, and the composition of the metal and cross section of the neck are adjusted until the body of the pendant will pull the neck in two and fall at some desired temperature.

In actual use the pendants are hung upon a small hook made at the end of a long wire which is introduced into the flue so that the pendant will be at the point where it is desired to measure the temperature of the gases passing up the flue. The way in which it is intended that these pendants be used is to begin with the lowest one and proceed until the one is found which will not fall off after 5 or 10 min. exposure. The temperature will then lie somewhere between that marked on the last pendant and the one used just prior to it. The maker recommends that in using these pendants several different points in the flue be tried, as it frequently happens that one part of the flue is occupied by gases which are much hotter than those in the adjacent parts.

An international machinery and engineering exhibition will be held at Olympia, London, from October 4 to 26, 1912, inclusive. This exhibition is organized by the Machine, Tool and Engineering Association, Ltd., and the exhibition offices are at 104 High Holborn, London, W. C. The projectors of the exhibition state that it is their purpose to secure, if possible, so comprehensive a display that it will be really representative of the engineering trades throughout the world. Copies of the prospectus, etc., will be furnished to those addressing the Bureau of Manufactures, Washington, D. C.

The American Railway Association's returns of idle freight cars in the United States and Canada showed a total of 20,532 on October 25, or a decrease of 15,365 from the number reported two weeks before.

### The Philadelphia Foundrymen's Association

The Philadelphia Foundrymen's Association held its regular monthly meeting at the Manufacturers' Club, Philadelphia, on the evening of November 1. Josiah Thompson acted as presiding officer. C. F. Grimes, who, with Thomas Devlin and Charles James, represented the association at the convention of the Atlantic Deeper Waterways Association, held in Richmond, Va., last month, made a brief but interesting report of the convention work. Secretary Evans read a communication from the Foundry Foremen's Association announcing that at its regular meeting November 14, at the Manufacturers' Club, Dr. Richard Moldenke would deliver an address on "The Use of Briquettes in the Cupola."

The paper for the evening's discussion was on "The Thermit Process," by W. R. Hulbert, Goldschmidt Thermit Company, New York. He reviewed briefly the application and function of thermit in metallurgical work, illustrating the method of procedure in its use by motion pictures showing the welding of a broken locomotive frame without detaching it from the locomotive and the operation of welding trolley rails in position in the street. Numerous lantern slides giving various stages of the process of thermit welding of crank shafts, stern frames and other steel castings and forgings were shown. He also referred briefly to the various metals and alloys, free from carbon, produced by the thermit process, which his company is supplying. Its titanium alloy is now being extensively used for the purification of iron and steel. The best results are obtained from placing it in the spout of the cupola, permitting the iron to wash over it, rather than by introducing it in the ladle or in the cupola or furnace itself. The absence of carbon in this alloy was alluded to as particularly beneficial, as it avoided the formation of titanium carbon compounds, which are a drawback rather than an aid to the reaction. Considerable discussion followed Mr. Hulbert's address, after which luncheon was served in the dining room of the club.

### The American Foundry Foremen's Association

At the monthly meeting of the American Foundry Foremen's Association on the evening of October 28, at the Grand Union Hotel, New York City, a very interesting talk was delivered by E. Raven Rosen-Baum, consulting engineer of the Ashton Laird Company and Cooper Hewitt Electric Company, on "Oxy-Acetylene Welding."

Mr. Rosen-Baum opened his remarks by speaking of the wide use of this process in Germany and France, and predicted that in a few years it would be as widely used in this country. He dwelt at some length on the advantages of the storage system over the generator system, especially for use in foundries. The storage system, he explained, is ready for use at an instant's notice; and as in foundries it is only an occasional casting that requires treatment the saving in cost is material. All foundrymen, he thought, could readily become expert with the oxy-acetylene flame, from their experience with molten metals, and from the use of the foundryman's "burn", but few of them could spare the time to become expert in producing the gases required—especially since they would only be called for occasionally.

He enlarged on the better work produced from storage gases, through the more constant and higher pressures, and the fact that both oxygen and acetylene could be bought so cheaply, and of such a degree of purity as could not be attained by the ordinary producer of his own gas. He then showed by actual demonstration how useful a storage plant could be, by treating, in the hotel parlor, with a miniature outfit, a number of samples of pin holes, chill holes and sand holes, which he rectified in a few minutes. He also "built up" broken corners and bosses, to show the readiness with which even lost parts could be added.

Great interest was displayed in the actual working of the process, and considerable "quizzing" of the speaker was indulged in by the members. On a call by the president for a show of hands from those who made bad castings, not a hand was raised; but it is rumored that several members interviewed Mr. Rosen-Baum *sub-rosa*, when the meeting adjourned.

## The Machinery Markets

Business in most machinery selling centers is considerably better than it was a year ago. The railroads are inactive, except in New York, where the trade is looking to some good business for shop equipment from two important roads. Textile machinery is in better demand in New England and there are many signs there of increasing business in other lines. Orders for small tools and milling machines are more active and second-hand equipment is in good demand in the Ohio markets. Electrical equipment and other power plant are in exceptionally good demand in the South. Trade is strengthening in the Southwest and Texas. In the latter market there is an unusual number of industrial projects involving large machinery requirements. Mining equipment continues to be the mainstay of the dealers on the Pacific coast and in Mexico. In other markets business continues about the same but there are encouraging reports based on increased inquiries.

### New York

NEW YORK, November 8, 1911.

The Pennsylvania Railroad has issued a small list of requirements for machine tools and automatics to be installed in its shops at Trenton, N. J., and the Delaware, Lackawanna & Western is doing some buying for shops near New York, presumably at Kingsland, N. J. The New York, New Haven & Hartford has bids in on the list mentioned in these columns a week ago, but from all accounts has not closed out for the material as yet. The New York Central is still placing an order here and there against its old list, but is apparently moving cautiously in its purchasing and a great deal of buying is believed to be yet done to fill all the requirements of its original list. Beyond this railroad business there is little new of interest. Power equipment for lighting and heating for office and loft buildings is in good demand and some new inquiries are coming forward in good volume, but they generally call for small lots of tools. The export trade continues good and the principal demand is for metal working machinery. The subway contractors in New York are good customers just now for excavating machinery, including drills, air compressors, power plant and metal working equipment for temporary repair shops. Jobbing foundries report a somewhat better demand for machine castings and general machine shops are fairly busy with repair work.

The Gallagher-Tompkins Company has been incorporated with \$175,000 capital stock to take over the patents and business of the G. & H. Mfg. Company, 270 Mulberry street, New York. The company has established temporary works at 1876 Broadway and will soon be in the market for metal working equipment for the manufacture of carbureters. Richard W. Gallagher, George D. Zahm and F. B. Tompkins, all of New York, are the incorporators.

The Thermodyne Engine Company has been incorporated with \$30,000 capital stock to manufacture machinery, engines, etc. The company will have manufacturing details ready in about 60 days. The incorporators are William Essen, W. H. Fritchman and L. T. Fitzer, 44 Pine street, who has the affairs of the company in charge.

The Genesee Pure Food Company, Le Roy, N. Y., is contemplating the erection of a new factory building at that place to be built in the spring of 1912.

The Granville Improvement Company, Granville, N. Y., is taking bids for a silk glove factory 41 x 140 ft., one story, which it will erect there.

The Pioneer Broom Company, Amsterdam, N. Y., is erecting a five-story addition 62 x 92 ft. to its factory at West Main and Pine streets to cost \$32,000.

The Thomas Motor Cab Company, Buffalo, which recently moved its plant to enlarged quarters at West Mohawk and State streets, has increased its capital stock from \$50,000 to \$100,000.

The Hoosier Sales Company, Jamestown, N. Y., recently incorporated, will not build a manufacturing plant at present but will market the Nelson system of individual electric lighting plants manufactured by the Greenville Metal Products Company, Greenville, Pa. The Metal Products company is at present equipped for its requirements, but expects to be in the market for more machinery within a short time. It is inquiring for a gas engine of from 2 to 5 hp. to be used in connection with its lighting plant, in quantities, also in storage batteries.

The Southern Paper Company, Tully, Onondaga County, N. Y., has been incorporated to manufacture pulp, paper and its products. A. Faunce and J. Siebert,

New York, and E. J. Page, Syracuse, N. Y., are the incorporators.

The Whyland-Nelson Motor Car Caompony, Buffalo, N. Y., recently organized, has established its plant at 49-53 Illinois street, where it will manufacture light-weight passenger automobiles with convertible light delivery car attachment. Frank V. Whyland, formerly with the Superior Motor Truck Company, is president and manager.

The Frontier Specialty Company, Buffalo, has been incorporated with a capital stock of \$30,000 to manufacture specialties for motor driven vehicles.

The Elaborated Ready Roofing Company, 693 Broadway, Buffalo, R. G. Weaver, manager, has purchased a site on Chandler street and the New York Central Railroad belt line, near Manton place, and will build a plant for the manufacture of roofing materials.

The Fonda Glove Lining Company, Fonda, N. Y., is taking bids for a one-story warehouse addition to be made to its factory.

The Weymer Company, Syracuse, N. Y., will build and equip a three-story brick factory 40 x 102 ft. at Division and Solar streets for the manufacture of brooms.

The Board of Water and Light Commissioners, Groton, N. Y., E. A. Hayden, secretary, is asking bids for a 100 to 150-kw. direct connected 250-volt steam unit and generating set for a three-wire system.

The Lakeside Forge Company, Erie, Pa., recently incorporated to take over the business and plant of the Lakeside Forge & Wrench Company, manufacturer of drop forges and wrenches, will add some drop hammers, medium sizes, die sinking machines and an engine and generator to the equipment of the plant.

### New England

BOSTON, MASS., November 6, 1911.

Evidences of a slight improvement in business conditions continue to multiply and there seems to be promise that a somewhat higher level of business will be established, with the probability of continuing until the expected good times which should follow the close of the presidential campaign. Business houses will be satisfied for the present with a moderate increase in orders, for in a great number of cases no great improvement would be needed to create a comfortable condition. In not a few works manufacturing is being carried on at the maximum; a still greater number are very well off in the way of orders; and the class below that is diminishing in number on the one hand, and is receiving recruits from those whose business has been flat. The textile machinery people are already feeling the effects of a better demand for textile products.

The Meriden Press & Drop Company, 153 State street, Meriden, Conn., has taken over the business of A. H. Merriman, and will continue the line of draw presses and drop hammers. Mr. Merriman has retired from the business. The new corporation has a Connecticut charter, and Henry M. Doolittle is the president, Herman Hess the treasurer and Raymond P. Hess the secretary. The business is an old one, having been established by Mr. Merriman some forty years ago, and its products are widely known. It is the intention of the new management to develop the product along the most modern lines. Mr. Doolittle is a practical press and drop man, and will be the manager. No immediate addition will be made to the company's manufacturing equipment.

The business of the Brosnihan Wrench Company, Worcester, Mass., has gone out of existence, the manu-

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facturing equipment having been acquired by the Prentiss Tool & Supply Company which is disposing of it.

The Waterbury Brass Company, Waterbury, Conn., is preparing plans for a new casting shop 65 x 160 ft., one story, of brick and steel construction.

The Underwood Typewriter Company, Hartford, Conn., is about to erect a building 50 x 217 ft., five stories and basement, which will replace an old two-story structure. The company has just completed a large factory building which has been occupied.

The Bryant Electric Company Bridgeport, Conn., will erect a one story brick manufacturing building, 40' x 150 ft.

The committee of the Chamber of Commerce of Hartford, Conn., having in charge the establishment of an additional industrial building in that city, has made its report, and the work of financing the plan will proceed immediately. An option on the land has already been procured, the site being bounded by the New York, New Haven & Hartford Railroad, with a frontage of 600 ft. on Hawthorne, Laurel and Forest streets. The building plans call for a structure 50 x 316 ft., four stories, with a basement under 60 ft. of the length, the estimated cost of the building being about \$109,000. The building will be of mill construction. Provision is made in the plans for a power plant and blacksmith shop. The committee, in arguing the undoubted success of the project, points out that the great typewriter industry of Hartford had its beginning in a building erected under similar auspices and occupied by the Underwood Typewriter Company, which now employs 3000 hands, and the presence of which was largely responsible for the location of other units of the industry in the city. There is a dearth of ready-made homes for industries in Hartford.

The Union Mfg. Company, New Britain, Conn., manufacturer of chucks and castings, is erecting a concrete and steel building, which will be used for sand-blasting castings and to admit of the installation of a larger compressor. New equipment will not be needed.

### Philadelphia

PHILADELPHIA, PA., November 6, 1911.

Merchants and a number of manufacturers report the volume of business transacted during October as being slightly in excess of that for the previous month. A few fairly good sized orders booked by some merchants had a strong bearing on the aggregate business, but as a rule the improvement has been due to slightly better buying in single tool lots. A somewhat better tone is therefore noticeable in the trade, and as the small lot movement appears to be holding up comparatively well the trade anticipates at least as good a month during November, although there is less sizable business under negotiation than was the case early in October. There is still a pronounced absence of any tool inquiry on the part of the railroads and but few of the pending inquiries have developed into orders. In the majority of cases tool builders maintain a fairly even operating rate. Locomotive builders have been taking additional orders, the local plant booking one this week for 40 engines for a Western road. The outlook, however, is not considered particularly promising. Second hand machinery merchants report business during October to have been fairly satisfactory, considering the general demand. Sales have mostly been small individually, but the aggregate reaches, in some cases, a very fair total. The boiler and engine trade continues rather irregular. Contracts for considerable moderate capacity equipment have been closed recently and a good volume of business is still under negotiation. The foundry trade continues to operate on an irregular basis. The demand for castings for machinery parts is still comparatively light.

The Glen Willow Ice Mfg. Company is having plans prepared for an addition to its ice plant and a one-story addition to its power house at its plant in Manayunk. David E. Haire, Land Title Building, is understood to be the engineer. Particulars regarding the proposed extensions are not available.

The American Pulley Company reports business during October as being somewhat in excess of that for the previous month. There has been a better run of small orders and the plant has been operating at full time. The export trade has been steadily increasing and extensive shipments have been made to a number of Continental countries. The home demand continues largely of the small lot variety, customers buying conservatively rather than with a view of stocking up.

The Board of Prison Inspectors will receive proposals until November 15 for supplies for the Holmesburg and Reed street prisons, to be furnished during the year 1912. Among materials required are electrical and plumbing supplies, pipe, valves and fittings, iron, steel, sheet iron, tinnerns' supplies, packing, belting, oils, hardware and tools. Specifications may be had and samples seen at the office of the prison, Tenth and Reed streets, Frederick A. Cooke, superintendent. Under the terms of the proposals quantities required may be increased or decreased as the inspectors may desire.

The Baldwin Locomotive Works has booked an order for 40 Mikado type freight engines from the Illinois Central Railroad. Several small orders have also been recently booked. The company has not yet decided to build the superstructure of the addition to its erecting shop at Eddystone, Pa., although the contract for the foundations has been given out. Sufficient work to keep the plant engaged at the present basis for several months is now on hand.

Reports that the Hellwig Silk Dyeing Company had purchased a large tract of land near Lardners Point and would erect a large plant on the site have been denied by that concern.

The Energy Elevator Company continues operating its plant to full capacity. Orders for a large number of electric hoists have been taken both for local and out of town work. A particularly heavy demand for carriage and wagon lifts is also reported. Inquiries are being freely received and for some classes of equipment this company finds it quite difficult to make early deliveries.

The League Island Navy Yard is in the market for a riveter and punch and for galvanized steel angles under schedules 4030 and 4036 respectively. Specifications and proposal blanks may be obtained from the navy pay office, this city, or on application to the Bureau of Supplies and Accounts, Washington, D. C. Proposals will be received until November 14.

The A. P. Wittman Company is building a 30 x 120-ft. addition to its plant at Chester, Pa., to be used as an addition to its finishing and grinding department. An extension 785 ft. long is being made to its forging shop to accommodate a new 1200-ton steam and hydraulic forging press to be installed. The equipment for this addition as well as to that for its finishing and grinding shop have already been provided for. This company reports orders to keep it engaged for several months.

City permits have been taken out by Fels & Co. for the erection of a warehouse 89 x 146 ft., five stories, to be built of concrete at Woodland avenue and Island road.

### Chicago

CHICAGO, ILL., November 6, 1911.

Sales of machine tools during the past month, while showing some improvement, were not heavy enough to make any change in the policy of manufacturers in reducing their stocks as low as possible. Dealers in machine shop supplies, such as drills and reamers, have enjoyed a very satisfactory volume of business. For heavier tools the inquiry has been fairly good from miscellaneous manufacturing plants as the result of an increase in the extension of manufacturing capacities in this territory. There remains, however, a reluctance to purchase and sales have been confined for the most part to a movement of individual machines.

The Chicago Oyster Pail Company, Joseph J. Lanzit, president, is preparing plans for the erection of a four-story factory building at Ogden boulevard and Washtenaw avenue to cost \$125,000.

The Chicago-Riverdale Iron & Steel Company, organized to engage in the manufacture of iron and steel products, has been incorporated by Thatcher W. Hoyt, Wendell S. Merrick and James W. Mitchell with a capital stock of \$100,000.

The Newbury Sales Company has an authorized capital stock of \$45,000 and will handle a general line of machinery appliances. Incorporators are Edward J. McCarty, Nathan Bartelstein and Nathan Jacobs.

The C. D. Osborn Glove Mfg. Company has had plans prepared for a three-story building to cost about \$50,000 and to be erected at the corner of Leavitt and Wabash avenue. The building will be of heavy mill construction.

The National Brass Foundry Company, with a capital stock of \$20,000, has been organized to do gen-

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eral foundry work in babbitt metals and metal castings, the incorporators being John Prince, Harry G. Dekker and George McGuire.

The F. E. Newbury Electric Company has been incorporated by F. E. Newbury, B. H. Bendheim and Francis Adams, Jr., all of Chicago, with a capital stock of \$26,000, to manufacture electrical supplies and appliances.

The Halldow Mfg. Company has been incorporated for the manufacture of electrical appliances by Charles M. Mudge, H. U. Mudge and L. C. Seward with a capital stock of \$10,000.

The Illinois Malleable Iron Company has taken out a permit to erect a one-story brick foundry on North Paulina street to cost \$3,000.

The Gordon Electric & Mfg. Company has been incorporated with a capital stock of \$15,000 to promote the sale of patented electrical devices and apparatus. The incorporators are Max W. Zabel, Otto M. Wermich and Hazel Jones.

The Newman Electric Light Company, Newman, Ill., has decided upon the immediate installation of a new lighting plant to be followed by a refrigerating station and a public heating plant.

The Kehoe Light & Power Company, Ft. Wayne, Ind., has been incorporated with a capital stock of \$100,000 to furnish light and power to suburban towns.

The John Wahl Candy Company, Duluth, Minn., has plans in preparation for the erection of a \$50,000 factory; three stories.

The Keokuk Brick & Tile Company, Keokuk, Iowa, has been incorporated with a capital stock of \$50,000 by Frank W. Sawn, William Scott, Paul S. Peckstein, Frank L. Griffey, P. S. Hentel and J. N. D. Dickens.

The Matthews Bros., Mfg. Company will occupy a new factory building now being erected for its use at the corner of Clybourne and Fowler streets, Milwaukee, Wis., at a cost of \$28,000.

The Aurora Automatic Machinery Company, Aurora, Ill., contemplates the expenditure of about \$75,000 on its plant with the erection of three additional buildings. The general offices of the company, now in Chicago, will be moved to Aurora.

The Bessolo Wrench Mfg. Company, Spring Valley, Ill., is about to let contracts for the construction of a plant consisting of a machine shop, 50 x 140 ft., and a boiler house, 40 ft. square. Complete machinery equipment will be required.

The Brillion Mfg. Company, Brillion, Wis., whose plant was recently destroyed by fire, is proceeding with its rebuilding.

The Brown Portable Elevator Company, with plants at Portland, Ore., and Saginaw, Mich., has arranged for the erection of a new plant at North Chicago, Ill.

The Aurora, Elgin & Chicago Railroad will install a new turbo-generator unit at its Batavia, Ill., power plant to have a capacity of 2500 kw.

The Oliver Concrete Machinery Company, Des Moines, Iowa, has been incorporated with a capital stock of \$100,000 by C. Dooersmith, E. D. Francesco and F. E. Neis.

The Pressed Steel Tank Company, Milwaukee, Wis., has acquired additional property adjoining its present site upon which an extension of its present plant is contemplated.

### Cleveland

CLEVELAND, OHIO, November 6, 1911.

Business with the local machine tool dealers has improved somewhat during the week. While no large orders or inquiries are coming out, several sales have been made in lots of 3 or 4 tools. Outside of orders for two good sized boring mills sales for the most part have been in rather small tools. The demand for milling machines is more active than for other lines. Inquiries for second-hand tools are more numerous than they have been for some time. The demand for turret lathes has picked up considerably and there is more activity in drill presses. There is little call for some lines of heavy handling machinery but the demand for handling equipment for coal and other commodities in connection with industrial plants has improved materially during the past few weeks. Makers are doing a good business in locomotive cranes.

The Superior Drop Forge & Mfg. Company, Cleveland, has completed an addition to its boiler house in which two 250-hp. boilers have been installed. Other extensions to its plant have been made and some new

machinery will be installed shortly, including a 2000 and 4000-lb. hammer. The company started in business about a year ago and has increased its capacity considerably during the past year. In addition to an up-to-date forging plant it has a fully equipped machine shop.

The Sterling Brass Company, Cleveland, has been incorporated with a capital stock of \$35,000 to manufacture plumbers' brass goods. The names of those back of the enterprise are being withheld for the present. A plant for the company is being erected at Forty-seventh street and St. Clair avenue.

The Buckeye Twist Drill Company, recently organized at Alliance, Ohio, expects to have its new plant now under construction ready for operation December 15. The company will succeed the Michigan Twist Drill Company, Detroit, Mich., which will be dissolved and its equipment moved to Alliance. E. D. Rogers, 802 Citizens' Building, Cleveland, is president of both companies. The Alliance plant will be under the management of M. F. Crawmers, who is now connected with the Detroit plant in a similar capacity.

The Warren City Tank & Boiler Company, Warren, Ohio, will shortly begin the erection of an addition to its plant, 50 x 100 ft., to be used for warehouse purposes. The company will also erect a steel crane runway to accommodate a large crane for convenient handling of supplies and finished products.

The City Council, Toledo, Ohio, has authorized Service Director Cowell to advertise for bids for a new bascule lift for the Cherry street bridge in that city. Former plans were rejected, new plans having been prepared for a lift that is estimated to cost \$142,000.

The Strong Mfg. Company will erect a pottery in Sebring, Ohio, for the manufacture of kitchen ware. The building will be about 600 x 300 ft.

The Trenkamp Stove & Mfg. Company, Cleveland, has let a contract for the erection of a two-story brick addition to its plant. It will be used for mounting gas ranges.

The Toledo Sugar Company, Toledo, Ohio, in which Cleveland, Toledo and Detroit men are interested, has been incorporated with a capital stock of \$1,000,000 to build a beet sugar refinery at Rossford, near Toledo. Judge John H. Doyle and R. S. Woodrow, of Toledo, J. F. Kilby, Cleveland, and others are named as the incorporators.

The Atlantic Foundry Company, Akron, Ohio, has increased its capital stock from \$10,000 to \$60,000.

The Xcelda Specialties Company, Cleveland, has been incorporated with a capital stock of \$15,000 by H. E. Davis and others to manufacture hardware specialties.

A company, not yet incorporated, is being formed in Alliance, Ohio, to build a plant for the manufacture of chain. A building 150 x 60 ft. is planned. Offices will shortly be opened in the Lindesmith block on Main street.

The Canton Porcelain Company, Canton, Ohio, has commenced the erection of a plant for the manufacture of brick, tile and other products. The company has been incorporated with a capital stock of \$25,000 by Fred Fenton and others.

The F. B. Stearns Company, Cleveland, maker of automobiles, has commenced the erection of an extensive addition to its plant.

The Toledo Metal Spinning Company, Toledo, Ohio, has been incorporated with a capital stock of \$10,000 by Charles E. Holt and others.

The American Concrete Metal Flange Pipe Company, recently organized at Mt. Gilead, Ohio, has decided to purchase a site and build a plant for the manufacture of its products.

### Cincinnati

CINCINNATI, OHIO, November 6, 1911.

The machine tool trade is jogging along at about the same pace as for the past six weeks. One feature of the business is that orders are principally coming from nearby customers and are not so well scattered. The Southern demand is not as encouraging as was anticipated some time ago, but it may develop into better business before the close of the year, although this field is never a very prolific one for machine tool builders.

The steamfitters' strike is now practically settled and the work of installing heating plants in several large buildings now under construction has been resumed.

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H. E. Kennedy & Co., architects, Second National Bank Building, Cincinnati, have awarded contract to the H. C. Hazen Contracting Company for a large three-story brick and steel building to be erected on Race street for the United States Tire Company. The new building will not be used for manufacturing purposes.

The Wheeling Metal & Mfg. Company, Moundsville, W. Va., has started work on an addition to its factory that will considerably increase its present capacity when completed.

It is reported that the Dayton-Xenia Traction Company is making arrangements to rebuild its power house at Dayton, Ohio, recently destroyed by fire. The name of the designing architect has not yet been given out.

Architect Harry Hake, Provident Bank Building, Cincinnati, will soon be ready to receive estimates for a large storage addition to the plant of the Blackburn Varnish Company, Cincinnati. The new structure will be of reinforced concrete construction.

It is announced that the Ohio Products Company, Cincinnati, whose incorporation was recently noted, will build its proposed distilling plant in Alabama. Arrangements were recently made with the Vinegar Bend Lumber Company, Vinegar Bend, Ala., for its refuse timber, including stumps on cut-over ground. The new company will make turpentine, wood alcohol and other similar by-products.

The Columbus Fence Company, Columbus, Ohio, has been incorporated with \$10,000 capital stock by R. F. Fisher and others. No manufacturing plans have yet been given out.

A five-story brick and steel building for storing beer will soon be constructed by the Wetterer Brewing Company, Cincinnati. E. F. Glaser is the architect in charge of the plans.

It is rumored that the Columbus Wire & Iron Works, Columbus, Ohio, will soon make a large addition to its plant that will nearly double its capacity.

The Kelly Road Roller Company, Springfield, Ohio, is said to have plans under way for an addition to its plant, but no details have yet been made public.

The King Machine Tool Company, Winton place, Cincinnati, intends to erect a pattern storage shop addition to its plant, and is in the market for second-hand structural material for a building to measure about 30 x 90 ft.

The Southern Collieries Company, Charleston, W. Va., has been incorporated with \$100,000 capital stock for the purpose of mining coal and manufacturing coke. W. G. MacCorkle, S. B. Chilton, S. Hess and T. S. Clark, all of Charleston, are named among the incorporators.

The Spring Hub Automobile Wheel Company is a new Cincinnati incorporation with \$10,000 capital stock. The new company will put on the market a new automobile wheel that will probably be manufactured under contract at the start. Edgar N. Woolley, Johnston Building, is secretary.

The Dayton Turbine Pump Company, Dayton, Ohio, has been incorporated with \$100,000 capital stock. Manufacturing plans have not yet been made public. Among the incorporators are Edward R. Kirby, Arthur J. Stevens, Nelson Emmons, Jr., and others, all of Dayton.

The Wilbern Oil Works, Cincinnati, has completed plans for additions to its plant, including an annex to the power building that will be 13 x 22 ft.

### Detroit

DETROIT, MICH., November 6, 1911.

Current orders for machine tools and shop supplies show a slight increase in volume and several sales of from three to five tools are reported. Inquiries, however, are not such as to make the outlook encouraging and no very great activity is looked for until after the holidays. The automobile trade is confining itself strictly to purchases for necessary replacement and concerns which are known to have future machinery requirements are holding back. Buying of second-hand machinery is light and widely diversified in character. Small machine shops making jigs, tools and patterns are in general finding business poor, although some special equipment is being built. Dealers in electrical equipment report a fair demand for generators. The market for boilers and engines shows an improvement,

but no large installations are reported. Foundries continue to operate on an even basis. The week in building circles was quiet, little new work of importance coming out.

Work has been started on the manufacturing building to be occupied by the Quinn Mfg. Company, of Kalamazoo, Mich., which is removing to this city. The factory will be located on Division street and will be of brick and mill construction, 70 x 150 ft., four stories. The company manufactures steam, mill and plumbing supplies.

Fire caused damage estimated at \$30,000 to the plant of the Phipps-Grinnell Company, manufacturer of electric automobiles at 14-16 Atwater street. E. W. Grinnell, secretary of the company, states that steps will be taken at once to resume operations.

Dodge Bros., brass founders and makers of automobile parts, who recently sold the buildings comprising their foundry department, are having tentative plans prepared for a new plant for which a large mechanical equipment will be required.

The Detroit Excelsior Company, maker of excelsior products, will build a two-story brick factory on Richmond avenue. George V. Pottle is the architect.

The Mechanics Motor Car Company has been incorporated with a capital stock of \$10,000 to manufacture and deal in motor vehicles and equipment. Paul Kuehn and G. L. Gast are the principal stockholders.

The Cudahy Bros. Company, packer, has awarded the contract for the erection of a large fireproof packing and storage house to Max Bartholomaci & Co.

The Detroit Graphite Paint Company is erecting a five-story factory, 50 x 50 ft., in Walkerville, Ont., across the river from Detroit, for use as a branch plant. The Winchester Construction Company of this city has the contract.

The Hallock Chemical Company will establish a plant within the Pennsylvania Salt Company's property in Wyandotte, Mich., to manufacture various by-products of that company's output.

The Cass Automobile & Repair Company has been organized with \$10,000 capital stock by E. C. Jacques, C. C. Rock and H. Knowlton.

The Grand Rapids Lumber Company, Grand Rapids, Mich., has been organized with a capital stock of \$250,000 and into it will be merged the Fuller & Rice Lumber Mfg. Company and the Mercer & Ferdon Lumber Company. The new company, in addition to operating the present plants, will build a large factory for the manufacture of interior finishes at an estimated cost of \$100,000.

John W. Wells and M. B. Lloyd, Menominee, Mich., have purchased a site of two acres in that city and will erect a large factory for the manufacture of an automatic coiled wire weaving machine, patented by Mr. Lloyd. It is understood that orders for \$25,000 worth of machinery for the new plant have already been placed and that the plant will be in operation by February 1.

Work has been started on extensive additions to the furniture factory of Aulsbrook & Jones, Sturgis, Mich. The new buildings will include a manufacturing building, 60 x 220 ft., three stories, an engine house 35 x 72 ft., and drying sheds, 40 x 72 ft. The capacity of the machine department will be doubled.

The Bay City Rendering Company, Bay City, Mich., is preparing plans for the erection of a modern abattoir, with a daily capacity of 50 head of cattle. The buildings will include a refrigerating plant, a rendering plant and a department for the manufacture of fertilizers.

Cooney & Smith, Saginaw, Mich., mattress manufacturers, have plans under way for an addition to their present plant, 30 x 120 ft., three stories.

The Ohio Dairy Company, Morenci, Mich., operating a milk condensary, is planning the erection of an addition which will practically double the capacity of its plant.

The Belcarmo Nut Butter Company, Grand Rapids, Mich., has incorporated with a capital stock of \$50,000 by J. T. Carpenter, A. A. Flory and D. S. Conover. It is planned to erect a factory, about 40 x 100 ft., for the manufacture of peanut butter.

Fire, which caused a loss of \$40,000, destroyed the salt block of the Crystal Flake Salt Company, Marine City. It is understood that operations will be resumed at an early date.

The Owosso Motor Company, Owosso, Mich., capitalized at \$100,000, has discontinued operations and a

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receiver has been asked for. The company manufactured motor trucks.

The Crawford Chair Company, Grand Ledge, Mich., is contemplating the removal of its plant to Grand Rapids, Mich., with the view of increasing the capacity of the factory.

The factory of the Newberry Float Company, Newberry, Mich., has been sold and the business reorganized under the style of the Eureka Float Company. Considerable improvements are contemplated.

The Little Motor Car Company, Flint, Mich., has been organized with a capital stock of \$1,200,000. The incorporators are W. H. Little, of Detroit, W. C. Durant, formerly general manager of the Buick Motor Company, and C. M. Begole and W. S. Ballenger, officers of the Flint Wagon Works, whose plant becomes the property of the new concern through the deal just closed.

The plant of the Michigan Fiber Box Company, Battle Creek, Mich., is being enlarged by the building of an addition which will double its former capacity.

The city of Greenville, Mich., has awarded the contract for the construction of a high school to cost \$75,000. A complete manual training department will be equipped.

The Grand Rapids Machine Tool Company, Grand Rapids, Mich., builder of milling machines, etc., reports an excellent volume of orders. The company is operating both a day and a night shift.

The capital stock of the Brooks Mfg. Company, Saginaw, Mich., manufacturer of knockdown furniture, has been increased from \$100,000 to \$140,000.

The Robeson Preserve Products Company, Port Huron, Mich., with \$100,000 capital stock, has been organized to manufacture chemical and preservative products for wood, iron and steel.

The Aten Mfg. Company, Jackson, Mich., has been incorporated with a capital stock of \$25,000 and will engage in the manufacture of sporting goods.

The Upton Machine Company, Benton Harbor, Mich., has filed articles of incorporation with the Secretary of State, giving its capital stock at \$30,000.

The Michigan Box Board Company, White Pigeon, Mich., has been adjudged bankrupt, with liabilities of over \$300,000. B. Gates, of White Pigeon, has been appointed receiver.

Detroit Insulated Wire Company has let contracts for the construction work on its new one-story brick factory on Wesson avenue, Detroit.

The Summers Fibre Company, Port Huron, Mich., is preparing plans for the expenditure of \$50,000 in the enlargement of its plant.

The Keeler Brass Company, Grand Rapids, Mich., is about to build a two-story brick factory at a cost of \$8,000.

### Indianapolis

INDIANAPOLIS, IND., November 6, 1911.

The plant belonging to the Shelby Foundry & Machinery Company, Shelbyville, Ind., has passed into the control of Henry Jones, of Waldron, Ind.; R. D. Thornton, of Anderson, and A. H. Schaitter and William Fretchling, of Shelbyville. It will be reorganized under the name of the Shelby Gas Engine Company.

The Sibley Stove Company, South Bend, Ind., has been organized with \$50,000 capital stock to manufacture gas stoves of a new pattern. The directors are Irving A. Sibley and Horace L. Greene, of South Bend, and N. C. Sprague, of Minneapolis, Minn.

The Salem Electric Light & Artificial Ice Company, Salem, Ind., has increased its capital stock from \$15,000 to \$30,000.

The Indiana Canning Company, Evansville, Ind., has purchased a site for a new and modern canning plant. The company employs over 400 people.

The Modern Specialties Mfg. Company, Goshen, Ind., has been incorporated with \$20,000 capital stock to manufacture machinery. The directors are C. C. Tiedermann, John Winter, E. E. Ash and J. A. Snapp.

The Letz Mfg. Company, Crown Point, Ind., has been incorporated with \$20,000 capital stock to manufacture feed grinding machinery. The directors are George Holland-Letz, John Holland-Letz, E. Holland-Letz, Otto Holland-Letz and William Holland-Letz.

The Auto Machine Company, Marion, Ind., has been incorporated with \$10,000 capital stock to operate a machine shop. The directors are George D. Lindsay, B. A. Tong and R. E. Breed.

The Morocco Water Company, Morocco, Ind., has been incorporated with \$50,000 capital stock to supply water. The directors are C. E. Zollars, C. R. Blakesless and W. B. Bauer.

H. Clay Raymond, receiver for the Muncie Chair Company, Muncie, Ind., will sell the company's extensive property, November 14.

The Gary & Southern Traction Company, Gary, Ind., has increased its capital stock from \$10,000 to \$300,000 for the purpose of beginning construction work and installing its power plant.

### The South

LOUISVILLE, KY., November 6, 1911.

Business in this market continues to be satisfactory. Nearly everybody in the trade reported that October showed a good increase over the corresponding month of last year and that the outlook for the remainder of 1911 is excellent. There is a good demand for electrical and other power equipment, though it is stated that boilers are not in as brisk demand at present as they were a short time ago. Trade in the East, as far as local manufacturers are concerned, is dull, but the South and Central West are coming along in good shape. Manufacturers of electrical apparatus report that they are getting a good deal of business as the result of the success of central stations in inducing manufacturers to install their service, this usually resulting in considerable purchases of motors and other equipment. On the other hand, if the user had decided to continue making his own power the electrical manufacturer might have sold generating equipment as well. So there are two sides to the story.

The Kentucky Gear & Machinery Company, Ninth and Jefferson streets, Louisville, is contemplating enlarging its plant.

The Hillen Mfg. Company, Louisville, has purchased a Warner & Swasey cock grinder.

The Abell Elevator Company, Louisville, bought through E. D. Morton & Co. a drill press of the Rockford Lathe & Drill Company.

W. J. O'Leary, Louisville, is in the market for a boiler to be installed in his dry cleaning plant.

The Asher Coal Company, Louisville, is erecting an addition to its elevator at 115 Charlton street and is preparing to increase the capacity of its coal-handling plant considerably. Power and conveying equipment will probably be purchased. Details as to the equipment wanted can be secured from T. J. Asher, Wasioto, Ky.

Plans have been completed for the power and steam heating plant for the 18-story Inter-Southern Life Building, Louisville. The contract for the boilers, heaters and other apparatus will be let by the general contractor, the Selden-Breck Construction Company, from its headquarters in St. Louis. Brinton B. Davis, Louisville, is the architect for the building.

The Globe Casket Company, Louisville, Edward Riess, manager, is equipping a plant for the manufacture of coffins at Preston and Burnett streets. It is installing wood working and other equipment. A St. Louis grinder was one of the items purchased.

The Railroad Metallic Tie Company, Princeton, Ky., John W. Hollowell, president, has filed articles of incorporation. Capitalization of \$1,000,000 is authorized and the company plans to manufacture a metallic cross-tie.

The Bon Jellico Coal Company, Knoxville, Tenn., which was recently organized for the development of coal lands near Williamsburg, Ky., will purchase equipment for the operation of its mines within the next 60 days. E. B. Taylor, Williamsburg, Ky., is manager. Capacity of 400 tons a day is to be provided for.

The Bowling Green Ice & Cold Storage Company, Bowling Green, Ky., is erecting a large addition to its cold storage plant on the Barren River.

The Eagle Casting Company, Winchester, Ky., has been given the contract for the erection of a large number of ornamental iron standards used in the new lighting system in the business district of Louisville.

New Orleans capitalists, including Joseph Toro, A. Monteleon and Charles Karst, are planning the purchase of the plant of the Southern Canning Company, Bowling Green, Ky., to operate it on a larger scale.

James B. Haggin, who operates Elmendorf, a large dairy farm near Lexington, Ky., will erect a four-story building for the handling of dairy products. Refrigerating machinery and power equipment will be required.

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C. H. Berryman, manager of the farm, will have charge of the purchase of the equipment.

The Evansville, Henderson & Owensboro Traction Company, which plans the operation of electric lines between Evansville, Ind., and Kentucky cities on the other side of the Ohio River, has purchased the tracks of the Illinois Central between Evansville and Henderson and will begin at once the work of converting it into a traction line.

The Bowles Photograph & Engraving Lamp Company, Evansville, Ind., has been incorporated with \$50,000 capital stock for the purpose of erecting a plant for the manufacture of lamps for photograph and engraving work. W. R. Bowles and Luther Hayden, of Hopkinsville, Ky., are among the organizers.

The Loomis & Hart Furniture Company, Chattanooga, Tenn., is erecting a furniture factory to take the place of one destroyed by fire several months ago. The company is in the market for boilers, electrical equipment, including motors, and wood-working machinery. J. D. Gahagan, factory manager, will purchase the equipment.

The Carthage Hickory Spoke Works, Carthage, Tenn., will erect a plant for the manufacture of spokes and hubs. The company has been incorporated with \$10,000 capital stock by J. C. Bilbry, J. A. Hargrove and Roscoe McGinnis.

The Herb Mfg. Company, Bristol, Tenn., has purchased the plant of the Ordway Mfg. Company and will manufacture bank, store and office fixtures. The company is a Texas corporation and is capitalized at \$50,000. H. J. Herb, president.

Samuel Cabot, Inc., Boston, Mass., will probably establish a plant in Harriman, Tenn., for the creosoting of railroad ties and other timber products.

Jellico, Tenn., will purchase 1160 tons of cast iron pipe for installation in connection with its new water system. A. B. Mahan is secretary of the Water Works Commission.

The Cumberland Cedar Mills, Chapel Hill, Tenn., will erect a mill for the manufacture of cedar lumber. Power and wood working machinery will be purchased about January 1. H. L. Woosley is general manager of the company, which has a capital stock of \$50,000.

The Chattanooga Traction Company, Chattanooga, Tenn., has been incorporated with \$100,000 capital stock by C. E. James and others for the construction of a street railway system in accordance with franchise privileges recently granted by the City Council. The company is also to build interurban lines to Dalton, Ga.; Dayton, Tenn., and other points. The company plans to get its power from a hydroelectric plant at Hale's Bar, Tenn.

A flour mill will be erected at Hohenwald, Tenn., by S. H. Hinson, J. W. Perry and others.

The plant of the Strickland Pattern Works, Chattanooga, Tenn., which was recently burned, is to be rebuilt. An 85 x 30-ft. building is to be erected.

The Rhea Springs, Tenn., Light & Power Company has been incorporated with \$1,000 capital stock by D. W. Hughes, J. C. Wasson and P. C. Chadwick.

Trenton, Tenn., has issued \$12,000 of bonds for the erection of an electric light plant.

The John G. Duncan Company, Knoxville, Tenn., is inquiring for prices on a second-hand, three-drum hoist with a lifting capacity of 30 tons.

The White Adding Machine Company, Nashville, Tenn., which, as reported in last week's *The Iron Age*, was incorporated with \$400,000 capital stock, has secured a factory site of four acres in South Nashville and will proceed with the erection of a building in the near future.

The Fidelity Investment Company, Nashville, Tenn., which is constructing an electric line from Nashville to Gallatin, Tenn., has let contracts for the electrical equipment to the General Electric Company.

The Hice Mfg. Company, Johnson City, Tenn., is building a new power plant for the operation of its lumber mill. A system for the removal of sawdust and shavings is to be installed. An addition to the mill will also be built.

The Tri-State Towing Company, Memphis, Tenn., has purchased a 100-hp. heavy-duty marine engine from Fairbanks, Morse & Co.

The Decatur Cornice & Roofing Company, Decatur, Ala., is adding to its plant.

M. E. Thornton, Hickory, N. C., is reported to be interested in the establishment of a furnace which will be operated electrically. Mr. Thornton expects to secure power from a hydroelectric plant in which he is interested.

LaGrange, Ga., is considering the erection of a municipal gas plant.

The Barbour Buggy Company, South Boston, Va., is planning to equip a department for the manufacture of buggy bodies.

The Choopee Power & Mfg. Company, Darien, Ga., has been incorporated with \$5,000 capital stock by A. De Sola Mendes and Wyatt de R. Barchy to generate and transmit electric power.

The forging room and foundry departments of the Harriman, Tenn., Mfg. Company, which were recently burned, have about been rebuilt.

Improvement in the pumping station of the water works plant of Union, S. C., is to be made in the immediate future. Electricity will supersede the steam power now being generated.

The Atlanta Mfg. Company, Atlanta, Ga., has been incorporated with \$100,000 capital stock by Joseph O. Bailey, A. B. Kennedy and others for the manufacture of oil mill, fertilizer factory, cement, milling, cotton mill and other manufacturing equipment machinery. Mill supplies will also be made.

A steel standpipe will be erected by the city of Union Springs, Ala., if a bond issue for \$5,000 is approved.

Chibley, Ga., will erect a water system at a cost of \$20,000. Plans are being drawn by the J. B. McCrary Company, Atlanta.

J. C. Walker, Marshallville, Ga., is organizing a company with \$40,000 capital stock for the erection of a water works system and an electric light plant.

The Niagara Sprayer Company is planning the erection of a plant at Roanoke, Va. The company will manufacture spraying machines and solutions.

The Johnson-Fitzgerald-Sweeney Lumber Mfg. & Railway Company is planning the development of 154,000 acres of timber lands near Jackson, Miss. The company has been capitalized at \$5,000,000 and three mills are to be erected. The company intends to do a good deal of railroad building and other construction work. P. H. Fitzgerald is one of the principal organizers of the company.

The Ohio River Contract Company, Evansville, Ind., is in the market for a locomotive crane.

The W. E. Small Spoke Mfg. Company, Corinth, Miss., is asking for prices on a short log sawmill, spoke lathes and two 25-hp. engines.

The Arkansas Natural Gas Company, Little Rock, Ark., is contemplating the extension of its pipe line from Little Rock to Memphis, Tenn. W. J. Diehl is secretary of the company.

Hewell Bros., Washington, Ga., are in the market for a considerable amount of second-hand machine shop equipment, including lathes, shapers, planers, drills, etc.

### St. Louis

St. Louis, Mo., November 4, 1911.

The conditions in the machine tool market continue to show a better feeling and the business being done presents a reasonably satisfactory aggregate. The purchases continue to be in small lots and of single tools, but dealers express themselves as reasonably well satisfied with the developments in the light of general conditions. The October improvement, as a whole, was not fully up to past records, but the continuing betterment makes for a good feeling for the future.

The Chester Knitting Mills, with plants in Chester, Collinsville and Binkneyville, Ill., has completed arrangements to consolidate its plants in St. Louis and install enough new machinery to double its present total capacity.

The adoption of Webster Groves, Mo., of a \$75,000 bond issue for water works has been followed by immediate preparations to begin the work of installation of the new plant.

The Continuous Frog & Crossing Company has been formed in St. Louis by W. J. Holbrook, H. F. Roach, G. F. Tower, Jr., W. G. Brown and others to manufacture and distribute a newly invented manganese steel frog which has been undergoing tests on some 20 railroads. It is stated that the new device presents a continuous rail and therefore the shock of crossings, etc., is eliminated.

The South St. Louis Foundry Company, of St. Louis, has obtained \$25,000 additional capital which will be utilized in enlarging the mechanical capacity of the plant.

The J. G. Massie Mfg. Company, with \$50,000 capital stock, has completed its organization and incorpora-

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tion, the first board of directors being John G. Massie, John G. Smith and Frank D. Wyant.

The Retail Liquor Dealers' Association of St. Louis has completed the financing of a \$150,000 brewery plant to be operated on a co-operative basis. The mechanical equipment will be bought within the next 90 days.

The St. Francois Oil Company, St. Louis, with \$150,000 capital stock, has been incorporated by H. J. Cantwell, Thomas H. Stamm and H. M. Beer to operate oil leases and well machinery on lands owned by the company.

The Big Muddy Coal Company, with headquarters offices in New York, but operating chiefly in the Illinois fields, has completed the purchase of 7000 acres of coal land in Jefferson County, Illinois, and will proceed at once to install equipment and sink shafts to operate. The chief holders of the company are Edmund Converse, Ambrose Monell, Albert W. Johnson.

The Farmers' Elevator Company, Morrison, Mo., has been incorporated with \$100,000 capital stock by Joseph A. Speckhals, John H. Starke and W. S. Toedman and will build and equip a grain elevator at once.

The Deft Adding Machine Company, Kansas City, Mo., with \$50,000 capital stock, has been incorporated by W. C. Renfrow, L. A. Robertson and H. B. Renfrow and will equip a plant for the manufacture of a new adding machine.

The Monarch Metal Weather Strip Company has bought a new site for a factory, and will build and equip with machinery a new plant tripling the capacity of its present establishment which will be abandoned when the new plant is completed.

The Roth Tool Company, incorporated with \$20,000 capital stock by John O. Wilson, E. W. Roth and E. B. Roth, has taken over the plant of the old B. Roth Tool Company and will enlarge and equip it with modern machinery and place it again in operation.

The National Light & Power Company, with a nominal capital stock of \$2,000, has been incorporated here by W. C. Morehead, Judson H. Boughton and A. B. Ewing, Jr., to build and equip a plant for a general lighting and power business under a city franchise which has recently been declared valid. The capital will be made commensurate with the enterprise later.

The Brookport Pearl Button Company, Brookport, Ill., has been incorporated with \$20,000 capital stock by J. M. Mitchell, M. J. White and L. E. Mitchell to build a factory for the manufacture of pearl buttons.

The Maule Mining & Coal Company, Belleville, Ill., with \$40,000 capital stock, has been incorporated to equip a coal property owned by Alexander Maule, Nicholas Hagan, Jr., and W. C. Schnell.

The franchise for a municipal gas plant at Edwardsville, Ill., has been accepted by Paul J. Scheller and H. J. Peckinpah, of Evansville, Ind., who have formed a company to put in the equipment.

The Imperial Clock Company, which was held up in its removal plans from Granite City, Ill., to St. Louis, by minority stockholders' action in court, has settled its difficulties and will proceed at once to equip its St. Louis manufacturing plant.

The Light & Development Company, St. Louis, has increased its capital stock from \$100,000 to \$200,000 for the purpose of increasing its mechanical equipment.

The Southern Railway Company is preparing a site at East St. Louis, Ill., upon which it will erect an 18-stall round house, machine shop, and coal handling equipment, representing an aggregate outlay of \$150,000.

### Texas

AUSTIN, TEX., November 4, 1911.

An unusual number of industrial projects involving large machinery requirements have come to light during the last week. There is more activity in the establishment of manufacturing plants in Texas at this time than has ever been known. Much attention is also being given to the improvement of municipal public utility plants. The demand for mining machinery in Arizona, New Mexico and Mexico shows a good increase.

The Medina Irrigation Company has in contemplation the erection of a large canning factory and pickling works upon its 60,000-acre tract of land that it is placing under irrigation near San Antonio.

The Cuero Packing Company has increased its capital stock from \$10,000 to \$20,000. It will make improvements to its plant at Cuero.

The Alvin Gin Company has been formed at Alvin with a capital stock of \$4,000. The incorporators are W. L. Browning, S. Jones, E. L. Long and others.

The San Benito Sugar Mfg. Company has increased its capital stock from \$150,000 to \$225,000. It is erecting a large sugar mill at San Benito.

The Stone-Webster Engineering Corporation, Boston, Mass., has closed its option on the property of the Beaumont Ice, Light & Refrigerating Company, Beaumont, Texas. This transaction does not embrace the refrigerating plant, but involves the electric light and power plant. Important improvements will be made to the light and power plant.

Isidore Newman & Son, New Orleans, have purchased a controlling interest in the Brush Electric Light & Power Company, of Galveston, and a new company will be formed to take over and operate the plant. It is announced that about \$300,000 will be expended in improvements. The power plant will be enlarged and the lighting system extended. Fred M. Lege, Jr., is general manager.

The Marfa Mfg. Company will install a gas plant and distributing system at Marfa.

The city of Brownsville has sold \$50,000 worth of bonds that were recently voted and will use the proceeds for enlarging the municipal electric light plant and extending the water works system.

The Waco Sash & Door Company has adopted plans for the erection of a factory at Waco that will cost about \$500,000. It will be devoted to wood working of various kinds.

Sterling & Sheffield will install a large plant at Newton for the manufacture of spokes and handles.

The electric light and power plant at Cuero is to be enlarged. The proposed improvement will cost about \$25,000.

C. H. Lennox, of Chicago, has under consideration the installation of a large plant at Orange for the manufacture of boilers.

The Blumenstein Chemical Works, Pottsville, Pa., will establish a factory at El Paso for the manufacture of powder and cartridges to supply the Southwestern and Mexican trade. The plant will cost about \$100,000.

B. O. McWhorter will install a pumping plant near Lubbock for the purpose of irrigating 200 acres of land. A number of other similar plants will be installed in that section. The water supply is obtained from shallow wells.

The Attorney General's department has approved an issue of \$67,000 of bonds of New Braunfels, the proceeds of which will be used to extend and improve the municipal water works plant and distributing system.

H. P. Holt, of Grand Junction, Col., and M. M. Brunk, of Roswell, will erect a factory at Roswell, N. M., for manufacturing an orchard heater.

The Kansas Ice Company, of Newton, Kan., will install an ice factory at Belen, N. M., to cost about \$100,000. It will have a daily capacity of 100 tons of ice and will be used primarily to supply the fruit cars of the Atchison, Topeka & Santa Fé Railroad.

The Eagle Milling Company, Tucson, will erect a large flour mill at Safford, Ariz. The site for the proposed plant has been purchased.

Benjamin Revilla and associates will install an ice factory at Chihuahua, Mexico, at a cost of \$20,000.

The city of Nuevo Laredo, Mexico, has just issued bonds in the sum of \$300,000 for the installation of a new water works plant and distributing system and a sewer system.

The Lotowana Placer Mining Company has adopted plans for the construction of two dams near Parker, Ariz., which will conserve 150,000,000 gal. of water, the laying of a pipe line and the installation of considerable machinery, all for the purpose of operating their placer mines.

The Compania Exploradora de Minas, of Pachuca, will install a reduction mill and cyanide plant and lay a pipe line to connect the two at its mines near Pachuca, Mexico.

C. W. Phillips and associates will install a 100-ton electrostatic plant and a power transmission line at its Penn-Sonora mine at Agua Caliente, Sonora, Mexico.

The Real del Monte y Pachuca Mining Company, of Pachuca, Mexico, will enlarge the capacity of its two mills at that place by installing additional equipment.

The Esmeralda-Parral Mining Company will install a large air compressor, a double drum and new boilers at its Esmeralda mine near Parral, Mexico.

The Float Gold Amalgamated Company will install a 50-ton cyanide plant at its mines near Nogales, Ariz. F. Hartman is superintendent.

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The Coronado Gold Mining Company will install a 20-stamp mill at its mines near Congress, Ariz.

The Philadelphia Mining Company will install a reduction mill at its mine near Organ, N. M.

The Bennet-Stevenson Mining & Milling Company will enlarge its reduction mill and install other machinery at its mine near Organ, N. M. The mill at present has a capacity of 300 tons.

The Donna Dora Mining Company, Kent, will install a reduction mill at its mine near Kent, N. M. George S. Courtney is general manager.

W. B. Bates, of Oro Grande, will install considerable new machinery upon his mine near Oro Grande, N. M.

The Reliable Machine Works, Harrisburg, Texas, is building an addition to its plant.

### The Pacific Coast

SAN FRANCISCO, CAL., November 2, 1911.

Machine tool business continues to drag. The volume of small sales keeps up fairly well, showing little change from week to week, but no large orders have been placed for some time, and those who are usually the principal buyers are keeping out of the market almost entirely. The number of new inquiries shows some increase this week, but they are in nearly all cases for single tools. According to the representative of a leading manufacturer, there is little demand for tools of standard design, but local machine shop operators are beginning to show considerable interest in special labor-saving devices, and during the coming year will probably install many improvements in this line.

The Southern Pacific Railroad appears to have the strike situation well in hand, but is still cutting down its purchases of tools, the only recent order from this source being for a 30-ton Shaw gantry crane for use at Los Angeles. The Western Pacific is concentrating its machine shop equipment in Oakland, dismantling several shops in the interior of the State, but as far as can be learned here no new equipment is being purchased.

California and Nevada mining interests are coming out for a good many small air compressor outfits, stamp mills, etc., but little large work is being undertaken in this line. Small contractors' equipment is in fair demand, and there is some inquiry for the heavier lines, which have been quiet for some time. The outlook in this department has been greatly improved by the renewal of construction on interurban railroads, and the beginning of work on several large hydroelectric projects, which will require a great deal of excavation and tunnel work in the next few years. Aside from a few sawmill inquiries, woodworking machinery is quiet. Plans are about complete for the expenditure of \$18,000,000 on State highway work, in connection with which it is expected that the State will install several quarry outfits.

The Columbia Steel Company's plant, at the new town of Pittsburgh, Cal., is now using titanium alloys quite extensively in its castings, and the management expresses great satisfaction with the results.

The board of public works of Los Angeles will receive bids November 6 for a pneumatic drilling outfit.

New figures will be received November 10 for an electric generating plant on the Los Angeles municipal aqueduct. The cost of the entire plant is estimated at \$500,000.

New figures are to be taken on boilers for the State hospital plant on the Los Angeles municipal aqueduct. The cost of the entire plant is estimated at \$500,000.

The Oakland Elevator Company has been incorporated in Oakland, with a capital stock of \$100,000, by W. J. Wigmore, A. R. Hanson and W. H. Buttner, with the intention of establishing an elevator plant.

L. Demartini, head of the largest nut shelling concern on the coast, will go to the East shortly to purchase new machinery.

The Horse Mountain Copper Mining Company, operating near Eureka, Cal., is installing a concentrating plant, and has under consideration plans for a 15-mile tramway.

The San Joaquin Light & Power Company is installing an automobile repair shop at Bakersfield, Cal.

The Southern Pacific Railroad has accepted plans for an electric substation at its Melrose station in Oakland. The operation of electric trains over the Oakland line will be started within a few weeks.

C. H. L. Ghriest is working on a project to establish an electric lighting plant at Beaumont, Cal.

The Tulare County Power Company has closed a contract for the installation of a 300-hp. auxiliary steam turbine generating plant, to be erected at Tulare, Cal.

The city of San Francisco has called for bids, to be received November 15, for 43 electric motor cars for the Geary street municipal railroad.

Bids will be received December 4 for condensers, pumps, feed water heaters, etc., for the defensive works at Manila, P. I.

The Northern California Power Company is starting work on its new hydroelectric development at the big bend of the Pitt River. The work will include the construction of a large dam, ditches and tunnels, aside from the installation of generating equipment.

The Oro Electric Corporation is preparing to install a large power plant on the Feather River north of Oroville, Cal.

The Hammel Oil Burner Company, Los Angeles, has purchased a building, and will install equipment for the manufacture of fuel oil burners.

The Atlas Auto Machine Shop has been incorporated in San Francisco, with a capital stock of \$10,000, by J. B. Dalziel, H. D. and N. F. Pressey.

San Francisco parties are considering the installation of a sash and door factory at Dorris, Cal.

The Reuben mine in Placer County, Cal., has been purchased by Chicago parties, who intend to install a new quartz mill and other machinery.

It is reported that the American Beet Sugar Company will increase the capacity of its mill at Chino, Cal., from 700 to 1000 tons daily.

The owners of the Jack Pot mine, Wonder, Nev., are planning to install a 20-stamp ore mill.

The Standard Lumber Company, operating several sawmills near Sonora, Cal., plans to add another mill before next summer.

The Gorham Engineering Works, Oakland, Cal., has taken up the manufacture of automobile fire engines, turning out 125-hp., 6-cylinder model, with turbine pumps. Orders have been booked for a large number of these machines.

### Eastern Canada

TORONTO, ONT., November 4, 1911.

New industries are being established, in some branches amalgamation is proceeding, enlargements of plant in a number of cases are planned or in progress, and developments in the industrial field generally indicate great faith in the future and a desire to get into a state of preparedness for larger business. There is no sign that the short-coming of the census has given any setback to the sanguine spirit of the country. Financial interests are hopeful that the present movement will continue. There is scarcely room for doubt that the change of government has been reassuring, inasmuch as the men now in office are committed to the policy of protection. Further, a programme of reforms—such as the regulating of freight rates in some measure, the checking of the combination tendency, the fostering of the agricultural industry, the aiding of the good roads movement, etc.—is regarded as auspicious for industrial and commercial enterprise. Reports of current business are very favorable. The weather and the roads are in a state conducive to trade.

The mayor and the majority of the aldermen of London, Ont., have expressed their willingness to submit at the municipal elections in January a by-law to raise \$100,000, to be applied for the purpose of attracting industries to the city.

When the tenders for the construction of Toronto's tube railroad course were opened two days ago they were found to be 14 in number. These tenders are for the work of excavating and concreting only. Laying the track, providing the cars, installing the electrical equipment, etc., will cost nearly as much as this construction. The lowest tender received was \$2,800,000. Three of the 14 companies tendering are Canadian, the rest are of the United States—New York, Boston, Lowell.

The City Council of Hamilton, Ont., has adopted the recommendation of the Board of Control to enter into a co-operative contract with the Hydro-Electric Commission of Ontario for the supply of 2000 hp. and to place an order for an additional 1000 hp. to be delivered by November 1, 1912.

The Ontario Power Company, from which the Hydro-Electric Commission of Ontario obtains all the power it is supplying by its transmission system to

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municipalities in the southwestern part of the province, has begun the construction of an addition to its plant below the river bank at the foot of the Horseshoe Falls of the Niagara. Two units of 12,000 hp. each will be provided for. The company's total generating capacity will thereby be raised to about 148,000 hp. The work is to be pushed forward during the winter and the units are to be installed by the opening of spring.

It is said that the Canadian Northern Railway Company's new car shops will be located near Hog's Back, about four miles from Ottawa, and will be built on a scale like that of the Canadian Pacific's Angus shops in Montreal.

D. McNichol, vice-president of the Canadian Pacific, says that his company will erect at Ottawa a new station just opposite that which the Grand Trunk is erecting there. It is expected to equal the latter in dimensions and elegance.

Nine hundred men are now at work on the construction of the pulp and paper mills which Price Bros., Ltd., are building at Jonquières, Que. The mills will cost about \$2,000,000. When in operation they will employ 1500 men. A model town is being built up. A very large power house will be required. It is expected that the whole plant will be in operation by next September.

The Bronson Company, Ottawa, has taken out a permit for a pulp mill to be erected on Amelia Island at the Chaudière.

It is reported that a million dollar pulp and paper plant will be established at Thorold, Ont., the output to be sold in the United States.

The Temiskaming & Northern Ontario Railway Commissioners have placed with the Canadian Locomotive Company, Kingston, Ont., an order for four engines of the consolidated type to be ready for service in April.

The Canadian Locomotive Company has received the contract for the building of 30 locomotives for the Canadian Northern. They are of the heavy consolidation type and are to be delivered for the season of 1912. Up to date the Kingston plant has received orders this year for 100 locomotives. It turned out its thousandth engine a few days ago.

The Commercial Envelope & Box Company, Binghamton, N. Y., is in negotiation with the municipal corporation of Kingston, Ont., for terms to establish its plant there.

McGregor & McIntyre, a steel construction firm, have purchased 10 acres in the vicinity of Toronto as the site of a plant.

The Dominion Government's peat plant at Alfred, near Ottawa, is to be closed down. It was put up for demonstration purposes, and having to such good purposes shown what can be done as to lead a private company to arrange for the establishment of a 15,000-ton peat plant near Ottawa the government sees no need for continuing its object lesson.

The ratepayers of Windsor, Ont., voted on November 2 in favor of the by-laws submitted to them to give municipal privileges to the Hupp Motor Car Company and the White Machine Works. The latter is a branch of a company at Eau Claire, Wis. The two companies will now proceed to erect factories.

### Western Canada

WINNIPEG, MAN., November 4, 1911.

In the West there is great building activity, and on this account there is considerable demand for equipment and structural material. The large building operations of the railroad companies make business for manufacturing plants and thus help to make the renewal demand for machinery brisker than it would otherwise be. The opening of the 70-mile transmission line of the city of Winnipeg's power plant is expected to be followed by the establishing and installing of new industries. The Canadian West is making progress in industrial enterprise, being marked in Alberta and British Columbia.

E. H. Patterson, of Rochester, and F. H. Keifer, of Port Arthur, Ont., have been negotiating with the Board of Control of the latter named city to obtain 15 acres of land at Bare Point upon which to locate several manufacturing industries.

A company is in negotiation with the municipal authorities of Ft. William for the establishing there of an industry, of which no particulars are published save

that the company will apply \$500,000 capital to the undertaking if an agreement is reached.

The Great Northern Tannery Company is building a large factory at Edmonton, Alberta. The bulk of the hides used will be obtained from the packing plants of the Swift Canadian Company and P. Burns & Co., both of which are very close to the new tannery.

The Canadian Coal & Chemical Company, Winnipeg, has been incorporated by Dominion authority with a capital stock of \$10,000,000. It is said to be the purpose of this Winnipeg corporation to establish an industry at Brazeau mines in Alberta, where coal would be reduced to tar and by-products.

Skene & Christie, contractors, Vancouver, B. C., are to construct the new Hotel Vancouver at Vancouver, B. C., for the Canadian Pacific Railway Company, the cost to be \$1,000,000.

### Government Purchases

WASHINGTON, D. C., November 6, 1911.

The purchasing officer of the Isthmian Canal Commission will open bids November 22, under canal circular 662, for furnishing a construction plant to be used chiefly in the erection of machinery and electrical equipment at the locks of the Panama Canal. Proposals submitted are to provide for complete machines and appliances. All parts and appurtenances essential to complete installation shall be provided by the contractor. The project is divided into three classes as follows:

Class 1, for four 15-ton locomotive cranes having a maximum radius of 40 ft. and 12,000 lb. capacity; class 2, for four 11-ton steel stiff-leg type derricks, having a maximum swinging capacity of 22,000 lb. at a 40-ft. radius; class 3, for four hoisting engines, vertical boiler double engine and two drum type with one reversible drum swinging gear.

In addition to alternate proposals for standard equipment bids are requested upon an electric hoist, the driving motor to operate upon a 3-phase, 25-cycle, 200-volt secondary circuit.

The Paymaster General, Navy Department, Washington, will open bids November 14 for furnishing and installing one motor generator set at Norfolk, Va., under schedule 4051, class 211.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids October 31 for material and supplies for the navy yards as follows:

Schedule 3947, class 1, two engine lathes for Mare Island—Bidder 50, Compressed Air Machinery Company, San Francisco, Cal., \$808; 69, Eccles & Smith Company, San Francisco, Cal., \$871; 95, Harron, Ricard & McCone, San Francisco, Cal., \$976.50; 142, Niles-Bement-Pond Company, New York, \$840; 153, Pacific Tool & Supply Company, San Francisco, Cal., \$1,000; 164, Joseph T. Ryerson & Son, Chicago, Ill., \$925 and \$845; 167, Rex Compressed Air & Drill Company, San Francisco, Cal., \$892, \$916 and \$962; 184, Springfield Machine Tool Company, Springfield, Ohio, \$975.

Schedule 3973, class 21, one electrically operated dough mixing machine—Bidder 22, Charles Brown & Son, San Francisco, Cal., \$853.30; 28, Berger & Carter Company, San Francisco, Cal., \$535; 46, Champion Machinery Company, Joliet, Ill., \$430; 62, J. H. Dey Company, Cincinnati, Ohio, \$850; 120, Lynn Superior Company, Cincinnati, Ohio, \$630; 151, Pacific Motor & Engine Company, San Francisco, Cal., \$535.

Class 22, one vertical single-barrel steam capstan—Bidder 94, Hyde Windlass Company, Bath, Me., \$395; 211, Williamson Bros. Company, Philadelphia, Pa., \$405.

Class 23, one gas producing apparatus—Bidder 61, N. K. Davis Machine Works, San Francisco, Cal., \$850.

Schedule 3998, class 91, two electric hoists for Philadelphia—Bidder 15, Alfred Box & Co., Philadelphia, Pa., \$1,200; 26, Brown Hoisting Machinery Company, Cleveland, Ohio, \$760; 98 Hoisting Machinery Company, New York, \$540; 142, Niles-Bement-Pond Company, New York, \$570.

Class 92, one hand self-feeding, ripping and resawing machine—Bidder 9, Alco Mfg. Company, New York, \$620 and \$725; 31, Berlin Machine Works, Beloit, Wis., \$1,175.39; 72, J. A. Fay & Egan Company, Cincinnati, Ohio, \$1,439; 133, Manning, Maxwell & Moore, New York, \$1,121 and \$1,277.

Class 93 one double cylinder four-roll surfacer—Bidder 9, Alco Mfg. Company, New York, \$2,650 and \$2,350; 31, Berlin Machine Works, Beloit, Wis., \$1,989 and \$2,089; 72, J. A. Fay & Egan Company, Cincinnati, Ohio, \$1,778 and \$1,878; 133, Manning, Maxwell & Moore, New York, \$1,492 and \$2,123.

Schedule 4003, class 102, three four-spindle drill presses for Washington—Bidder 58, De Zouche Hanson & Co., Philadelphia, Pa., \$400; 75, Frevert Machinery Company, New York, \$238; 77, Garoni Machine Company, New York, \$240; 109, E. F. Kerwan & Co., Baltimore, Md., \$160; 111, Kenn Machinery Company, Baltimore, Md., \$226.25 and \$572; 133, Manning, Maxwell & Moore, New York, \$285.30, \$331.

Schedule 4005, class 123, one power press or brake for Norfolk—Bidder 74, Ferracute Machinery Company, Bridgeton, N. J., \$3,553; 86, A. Garrison Foundry Company, Pittsburgh, Pa., \$2,694; 133, Manning, Maxwell & Moore, New York, \$2034 \$2,014 and \$2,099; 145, George A. Ohl & Co., Newark, N. J., \$2,021.60; 160, Prentiss Tool & Supply Company, New York, \$2,010; 169, Joseph T. Ryerson & Son, Chicago, Ill., \$1,962; 188, Toledo Machine Tool Company, Toledo, Ohio, \$2,669.50.

Class 124, one three-spindle radial boiler plate drill—Bidder 71, Fairbanks Company, Washington, \$8,175; 133, Manning, Maxwell & Moore, New York, \$6,346; 143, George A. Ohl & Co., Newark, N. J., \$680.

# Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—		Genuine Iron Sheets—		METALS—	
Bar Iron from Store—		Galvanized		Tin—	
Refined iron:		Nos. 22 and 24.....	lb 5.50¢	Straits pig.....	lb 45 @ 46
1 to 1 1/4 in. round and square.....	lb 1.70¢	No. 26.....	lb 6.00¢	Lake ingot.....	lb 14 @ 14 1/2
1 1/2 to 4 in. x 1/2 to 1 in.....	lb 1.50¢	No. 28.....	lb 7.00¢	Electrolytic.....	lb 13 1/2 @ 14
1 1/2 to 4 in. x 1/2 to 5-1.....	lb 1.50¢	Corrugated Roofing—		Casting.....	lb 13 1/2 @ 14
Rods—1/2 and 11-16 round and square.....	lb 1.50¢	2 1/2 in. corrugated.....	Painted. Galvd.	Spelter—	
Angles:		No. 24.....	100 sq. ft. \$3.75	Western.....	lb 6 1/2 @ 7 1/2
3 in. x 3/4 in. and larger.....	lb 1.80¢	No. 26.....	100 sq. ft. 2.85	Zinc—	
3 in. x 3-16 in. and 1/2 in.....	2.20¢	No. 28.....	100 sq. ft. 2.50	No. 9, base, casks.....	lb 8 1/2¢ Open.....
1 1/2 to 2 1/2 in. x 1/2 in.....	1.95¢	Tin Plates—		Lead—	
1 1/2 to 2 1/2 in. x 3-16 in. and thicker.....	1.85¢	American Charcoal Plates (per box)		American pig.....	lb 5 @ 5 1/2
1 to 1 1/4 in. x 3-16 in.....	1.95¢	"A.A.A." charcoal:		Bar.....	lb 6 1/2 @ 6 3/4
1 to 1 1/4 in. x 1/2 in.....	2.00¢	IC, 14 x 20.....	\$6.65	Solder—	
1/2 x 1/2 in.....	2.10¢	IX, 14 x 20.....	7.90	1/2 & 3/4 guaranteed.....	lb 25 1/2 @ 26
3/4 x 1/2 in.....	2.15¢	American Coke Plates—Bessmer—		No. 1.....	lb 23 1/2 @ 24
3/4 in. x 1/2 in.....	3.35¢	IC, 14 x 20.....	107 lb. \$4.50	Refined.....	lb 22 1/2 @ 23
3/4 x 3-32 in.....	4.40¢	IX, 14 x 20.....	5.50	Prices of solder indicated by private brand vary according to composition.	
Tees:		American Terne Plates—		Antimony—	
1 in.....	2.25¢	IC, 20 x 28 with an 8 lb. coating.....	\$8.70	Cookson.....	lb 10 1/2 @ 10 3/4
1 1/4 in.....	2.10¢	IX, 20 x 28 with an 8 lb. coating.....	10.70	Bismuth—	
1 1/2 to 2 1/2 x 3-16 in.....	1.90¢	Seamless Brass Tubes—		Per lb.....	\$2.00 @ \$2.25
1 1/2 to 2 1/2 x 3-16 in.....	2.0¢	List November 13, 1908.....	Base price, 18¢	Aluminum—	
3 in. and larger.....	1.85¢	Brass Tubes, Iron Pipe Sizes—		No. 1 aluminum (guaranteed over 99% pure), in	
Beams.....	1.80¢	List November 13, 1908.....	Base price, 18¢	Ingots for remelting.....	21¢ and 22¢
Channels, 3 in. and larger.....	1.80¢	Copper Tubes—		Rods and Wire.....	Base price 31¢
Bands—1 1/4 to 6 x 6-16 to No. 8.....	2.00¢	List November 13, 1908.....	Base price, 21¢	Sheets.....	Base price 32¢
Burden's "H. B. & S." iron, base price.....	2.95¢	Brazed Brass Tubes—		Old Metals—	
"Burden's Best" iron, base price.....	3.15¢	List February 1, 1911.....	18 1/2¢ @ lb	Dealers' Purchasing Prices Paid in New York.	
Norway bars.....	3.00¢	List February 1, 1911.....	14 1/4¢ @ lb	Copper, heavy and crucible.....	10.50 to 10.75
Merchant Steel from Store—		List February 1, 1911.....	14 1/4¢ @ lb	Copper, heavy and wire.....	10.25 to 10.50
Bessemer machinery.....	per lb	High Brass Rods—		Copper, light and bottoms.....	9.25 to 9.50
Toe calk, tire and sleigh shoe.....	2.50 @ 3.00¢	List February 1, 1911.....	14 1/4¢ @ lb	Brass, heavy.....	7.00 to 7.25
Best cast steel, base price in small lots.....	7¢	Roll and Sheet Brass—		Brass, light.....	5.50 to 5.75
Sheets from Store—		List February 1, 1911.....	14 1/4¢ @ lb	Heavy machine composition.....	9.00 to 9.25
Black		Brass Wire—		Clean brass turnings.....	6.75 to 7.00
One pass, C.R. R. G.		List February 1, 1911.....	14 1/4¢ @ lb	Composition turnings.....	7.50 to 7.75
soft steel, cleaned.		Copper Wire—		Lead, heavy.....	8.50
No. 16.....	lb 2.35¢.....2.75¢	Carload lots mill 13 1/2¢		Lead, tea.....	8.50
Nos. 18 to 20.....	lb 2.40¢.....2.85¢	Copper Sheets—		Zinc, scrap.....	4.00
Nos. 22 and 24.....	lb 2.45¢.....2.85¢	Sheet copper hot rolled, 10 oz. quantity	lb 17¢		
No. 26.....	lb 2.50¢.....3.05¢	lots) Sheet copper cold rolled, 1¢ @ lb advance			
No. 28.....	lb 2.85¢.....3.30¢	over hot rolled.			
Russia, Planished, &c.		Sheet copper polished 20 in. wide and under,			
Genuine Russia, according to assort-		1¢ @ square foot.			
ment.....	lb 12 @ 14 1/2	Sheet copper polished over 20 in. wide, 2¢			
Patent planished, W. Dewees		@ square foot.			
Wood.....	lb A. 10¢; B. 9¢ net	Planished copper, 1¢ @ square foot more			
Galvanized		than polished.			
Nos. 12 and 14.....	lb 2.65¢				
No. 24.....	lb 3.00¢				
No. 26.....	lb 3.20¢				
No. 28.....	lb 3.50¢				
No 20 and lighter 36 inches wide, 25¢ higher.					

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